

PSYCHOSOCIAL DETERMINANTS  
OF CHRONIC STRESS IN NURSING

1987

RIKLI



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A handwritten signature in black ink, reading "Patricia A. Rikli". The script is cursive and fluid, with the first name "Patricia" being more prominent than the last name "Rikli".

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## ABSTRACT

Title of Dissertation: Psychosocial Determinants of Chronic Stress in Nursing

Patricia A. Rikli, Doctor of Philosophy, 1987

Dissertation directed by: Andrew Baum, Ph.D., Department of Medical Psychology

Symptoms related to chronic stress and post-traumatic stress were investigated in registered nurses working on intensive care and nonintensive care burn wards and compared to comparable nurses assigned to selected intensive care and nonintensive care wards.

Self-report questionnaires assessed job stress, job satisfaction, stressful non-work events, emotional support, coping style, symptoms associated with chronic stress, behaviors associated with post traumatic stress, and demographic data.

It was hypothesized: (1) Burn nurses would report more job stress and symptoms and less job satisfaction; (2) there would be a positive correlation between job stress and outside stressors; (3) emotional support would be inversely correlated with job stress; (4) nurses reporting more stress would use fewer coping responses and that the predominant coping style would be emotion-focused; (5) nurses reporting less stress would use more coping responses and that the predominant coping style would be environment-focused.

Two analytic designs were used: (1) location of assignment (burn versus nonburn) by category of nursing care (ICU versus NonICU); and (2) location of assignment by level of job stress. Burn nurses were not more stressed or dissatisfied than Nonburn nurses. A significant difference was found on the job related stress scale. Both Nonburn groups reported higher levels of job stress than did both of the burn groups. Nonburn nurses reported significantly more anxiety than did Burn nurses. Burn nurses reported significantly less avoidance behavior than did Nonburn nurses. There were no differences on the job satisfaction scale.

There was a significant difference between the high and low stress groups: the high stress group used more emotion-focused responses. A positive correlation was found between job stress and outside stress. An inverse relationship was found between job stress and emotional support.

Psychosocial factors (nonwork stress, sex, years of experience as an R.N., and emotional support) contributed 50.6% of the variance in job stress. Location of assignment (Burn, ICU, and the interaction of the two) added an additional 5.6% to the variance. This suggests that working in a burn unit is less of a factor in determining work stress than is psychosocial status of the individual nurse.

PSYCHOSOCIAL DETERMINANTS OF  
CHRONIC STRESS IN NURSING

by

Patricia A. Rikli

Dissertation submitted to the Faculty of the  
Department of Medical Psychology  
Graduate Program of the Uniformed Services University of the  
Health Sciences in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy 1987



## DEDICATION

This work is dedicated to passages  
that point to my  
source of strength.

...those who look to the Lord will win new strength, they  
will grow wings like eagles; they will run and not be weary,  
they will march on and never grow faint. Isaiah 40:31

Let hope keep you joyful; in trouble stand firm; persist in  
prayer. Romans 12:12

from The New English Bible

## Acknowledgements

This dissertation represents much more to me than just the completion of the degree. It is the product of hard work and discipline on my part and support from my committee, family, friends, and the Army Nurse Corps.

I am grateful to my committee for their dedication to guiding me through the process of scientific inquiry . Thank you for meeting with me at odd hours to accommodate my complex schedule.

The Army Nurse Corps is a group of very special people to me rather than a bureaucracy. Many have supported me in my academic endeavors. I thank BG(R) Connie Slewitzke, who at the time of my study, was Chief, Army Nurse Corps. COL M. Walls and COL J. Maloney at Brooke Army Medical Center and LTC D. Kyzar at the U.S. Army Institute of Surgical Research greatly facilitated my gaining access to nurses. Other colleagues I wish to recognize are CPT A. Koven, COL(R) E. Finn, LTC M. King, LTC B. Turner, and MAJ M. Padgett.

I am blessed with friends who willingly gave of their time to help me. I thank them for their sensitivity to me in knowing when to offer help. The support came in many forms: childcare, prayers, preparing meals, teaching me the tools of scientific inquiry, and providing recreational breaks. Thank you, Rufus, Marc, Linda, Robin, See, Vicki, John, and Stephanie.

Without the support of my parents and my sons, completion of this dissertation would have been impossible. My sons, ages seven and eight at the time, went to live with my parents in Oklahoma for six months so I could have time to complete the dissertation. I thank the four of them for that sacrifice and for believing in me.



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## Introduction

Nursing is a stressful occupation (Kelly & Cross, 1985). The stressors present in intensive care and nonintensive care nursing may interfere with job performance (Bailey & Bargagliotti, 1983; J. Maloney, 1982). The quality of nursing care and the welfare of the patients may be jeopardized by the negative effects of stress. In addition to having a damaging effect on job performance, stress has been implicated as a contributing factor in nursing shortages and professional impairment (Castiglia, McCausland, & Hunter, 1983; Jacobson, 1983; Vogt, Cox, Velthouse, & Thames, 1983). Professional impairment refers to performance being hampered by alcohol and/or drug dependence and emotional illness (Cronin-Stubbs & Schaffner, 1985). In 1982 there were 1.7 million licensed registered nurses (R.N.'s) with only 1.33 million registered nurses in active practice in the U.S. (NLN, 1984). Another study indicated that 30% of the registered nurses with current licenses were unemployed and that only 3% of the unemployed registered nurses were looking for jobs in the field of nursing (ANA, 1983). One possible inference is that registered nurses are leaving due to job dissatisfaction which may be related to occupational stressors such as shiftwork, increasing patient acuity, and the demands of interpersonal relationships with patients, families, and other professionals. The shortage has had the greatest impact on hospitals because approximately 65% of the



registered nurse workforce is employed in the hospital setting (Moses, 1982).

Another possible example of stress-related problems in the nursing profession is suggested by a 1982 resolution passed by the American Nurses Association recommending a program to study and treat nurses whose practice is affected by substance abuse and emotional problems (ANA, 1984). It is estimated that "10-20% of health care professionals are impaired by alcohol and substance abuse" (Kelly, 1982).

Bissell and Haberman (1984) were the first to conduct a longitudinal study of alcoholism in selected professional disciplines. The professions investigated were dentistry, law, medicine, nursing, and social work. The researchers found it difficult to establish a prevalence rate due to the attitude of the nursing profession toward alcohol abuse and the stigma associated with alcoholism held in general. It was found that nurses deny problems associated with alcoholism in co-workers, superiors, and subordinates until justification for legal action such as removal of license is found. According to their study, early identification of possible problem drinking is not done.

There are several estimates regarding the number of nurses that are chemically impaired or dependent on chemicals. One estimate is that there are 75,000 alcoholic R.N.'s in the U.S. (Zahourek, 1981). Another estimate is that nurses have a 50% higher rate of dependency than nonnurses (Kabb, 1984).

While the literature does speak of an association of dysfunctional coping with occupational stress and the possible development of alcoholism, very few studies of stress in nursing as the cause of alcoholism among nurses were found. One study which investigated the relationship of alcoholism and burnout in student nurses was found. Haack (1987) studied 279 sophomore, junior, and senior students enrolled in a school of nursing. The subjects were divided into four groups based on the score of the Staff Burnout Scale for Health Professionals. Information regarding frequency and amount of drinking was collected using a self-report questionnaire. Haack (1987) found that subjects in the high burnout group reported more alcohol consumption than the subjects in the low burnout group. Hutchinson (1986) conducted qualitative research using case histories of ten nurses and interviews of an additional 20 nurses who had appeared before a board of nursing for chemical dependence that involved drugs and/or alcohol. The findings indicated that chemical dependence began as a way to deal with painful events of work and personal life (Hutchinson, 1986). A survey has found an association with alcoholism and job stress in settings other than nursing (Margolis, Kroes, & Quinn, 1974).

Not all nurses are leaving the profession or engaging in dysfunctional coping methods. Nevertheless, because those who are practicing nursing are subject to the same stressful conditions as those who left, it is important to

investigate occupational stress. A number of researchers investigating the emotional difficulties resulting from occupational stress have used the rubric of "burnout syndrome". The "burnout syndrome" has been described as a feeling of exhaustion, emotional drain, and decreased ability to function effectively in the work setting (Albrecht, 1982; Cronin-Stubbs & Brophy, 1985; Cronin-Stubbs & Schaffer, 1985; Jones, 1981; McElroy, 1982; Pines & Aronson, 1980). The "burnout syndrome" seems to be a combination of some of the features seen in adjustment disorders and major depressive episodes (M. Maloney, 1982). Behaviors cited as indicative of burnout include alienation, inability to cope with stress, and alcohol and drug abuse (Forney, Wallace-Schutzman, & Wiggess, 1982; Jacobson, 1983).

Some of the symptoms that have been described as "burnout" in the nursing literature are similar to those found among disaster victims and combat veterans, but an explicit link between occupational stressors found in nursing and symptoms associated with post-traumatic stress has not been studied. Post traumatic stress is the reaction of a person who has been confronted with an extraordinary event which is outside the range of events which most people encounter. The reaction to the event continues after the event is over and the memories of the event make it seem as if the event is still occurring. The reaction may include behaviors such as diminished interest in activities that



were once significant to the person, feeling estranged from others, sleep disturbance, difficulty concentrating, or hyperalertness. Occupational stressors have been linked to the development of symptoms associated with chronic stress. This study extends the investigation to a specific population of workers and considers one specific type of stress symptomatology, post-traumatic stress.

This study considers the specialty of the nursing of burn patients, hereafter called burn nursing, and the unique stressors encountered by nurses assigned to a burn unit. The conceptual framework of this study, provided by research on chronic stress and trauma, is that aspects of burn nursing such as dealing with death, disfigurement, and suffering of patients, can contribute to the development of chronic stress symptoms and symptoms associated with post-traumatic stress.

The concept of stress is discussed in broad terms to provide the foundation for a discussion of stress reactions and stress as it is seen in nursing. This study focuses on symptoms and behaviors that are associated with chronic and post traumatic stress. Symptom reporting by R.N.'s working in burn intensive care and nonintensive care areas are compared with symptom reporting by a control group of nurses, in specialties other than burn nursing, in intensive care and nonintensive care areas. Variables studied are occupational stressors, stressors away from work, job satisfaction, access to emotional support, coping styles,

and demographic variables which other studies of stress in nursing have been found to be related to the reporting of stress.

## STRESS

In this section a chronological summary of the major theorists in the area of stress is presented. The definition of stress has been attempted through several research approaches. The stress response involves the integration of physiologic and psychologic reactions.

Physiological mechanisms of stress. Cannon (1915, 1929) defined the "emergency-response" as arousal of the sympathetic nervous system through the secretion of epinephrine from the adrenal medulla. This emergency response, commonly called "fight-or-flight response," includes an increase in: heart rate, respiration, blood pressure, blood flow to active muscle tissue, rate of cellular metabolism, blood glucose concentration, and rate of blood coagulation (Guyton, 1981). There is a general decrease in blood flow to the periphery and gastrointestinal tract. The sympathetic nervous system increases activity in organs that are necessary for reacting quickly and with maximum strength and decreases activity in organs that are not necessary for mobilization. Such a response is adaptive when fighting or fleeing is acceptable. Frequently, when the stress occurs in an occupational setting, the situation is not one in which fighting or leaving is acceptable, so

other methods of coping must be found. If coping strategies do not decrease the stress reaction, the initially adaptive function of the increased activity of the sympathetic nervous system can be destructive.

Selye (1956, 1976) defined stress as the body's nonspecific response to any demand or threat. The term "nonspecific response" refers to the notion that regardless of the type of stressor, a triad of hypertrophy of the adrenal cortex, involution of the thymus, and gastrointestinal bleeding is caused by the General Adaptation Syndrome (GAS). GAS has three phases: (1) alarm in which the body mobilizes and prepares to meet the threat, (2) resistance in which the body deals with the threat, and (3) exhaustion which occurs if the resistance is not effective. The alarm phase activates the secretion of adrenocorticotrophic hormone (ACTH) from the pituitary which causes secretion of cortisol from the adrenal cortex. Cortisol mobilizes energy by causing the release of stored free fatty acids and stimulating gluconeogenesis.

Mason (1968, 1975) took issue with Selye's notion of nonspecific response to stress and found that there are different patterns of responses which seem to depend on the stressor. Mason found that endocrine system involvement in the stress response was not limited to the corticosteroids (such as cortisol) and the catecholamines (epinephrine and norepinephrine). During stress there are increases in thyroid hormones and growth hormones and decreases in

insulin, testosterone, and estrone. Thus, the endocrine responses during stress involve catabolic activity which increase energy availability.

The work of Cannon, Selye, and Mason provided a physiological description of the whole body response to stress. In summary, the sympathetic nervous system activates the adrenal medulla while the pituitary, by releasing ACTH, activates the adrenal cortex. Both of these systems appear to be activated through the hypothalamus, and some degree of central nervous system integration is apparent. Mason suggests that there is articulation between the endocrine cells and the neurons in both the anterior and posterior pituitary.

Psychosocial mechanism of stress. A proper description of stress cannot merely focus on its physiological changes. It is important to consider psychological mechanisms such as concepts of appraisal, coping, and mediators of stress. A mediator of stress is a variable which affects how a person will respond to a given stressor. When a person interprets (appraises) a situation as a potential threat to his/her well-being, as harmful, or as a challenge, one begins to react in a way to reduce the threat or meet the challenge of the stressor. One considers what resources he/she has which may be useful in the present situation. That part of the process is termed secondary appraisal. A plan is then developed and behavior to remove the threat or meet the challenge is initiated, and that part



of the process is called coping. The stress process involves stressors, appraisal, coping, and consequences of coping.

stressors There are three general types of stressors: cataclysmic events, personal stressors, and background stressors (Gatchel & Baum, 1983). War, natural disasters, and technological disasters, such as nuclear accidents and chemical leaks, are examples of cataclysmic stressors. Death of a loved one, loss of job, and divorce are examples of personal stressors. Lazarus and Cohen (1977) have labeled background stressors as daily hassles. Possible examples of daily hassles or background stressors are job dissatisfaction and commuting.

The sudden, powerful, and sometimes unpredictable occurrence of cataclysmic stressors requires a great deal of effort in order to cope effectively. Often, many people are involved at the same time. This can contribute to recovery as people come together to help each other. The help or social support people give and receive can be nonpsychological, such as material aid, or psychological, such as appraisal and emotional support (Cohen & McKay, 1984). In Social Comparison Theory, Festinger (1954) described the process that people use in getting feedback on the appropriateness of their feelings and reactions when faced with a novel situation. For example, a victim of a flood may turn to other flood victims around him to see if his reactions are similar to theirs. The use of a social



standard can reduce the anxiety of being different. Seeing that others are in the same plight, there is less of a tendency to feel that one is at fault. Using the reference group also provides a way to meet affiliation needs. The cataclysmic stressor is brief but may have a lasting impact on people due to the magnitude of the disruption of life and possible loss of property and significant others (Gatchel and Baum, 1983). Recovery is facilitated if the event happens once and has a clear endpoint followed by rebuilding and repair. With an event such as a nuclear accident, recovery is more difficult because of concern for what the long-term effects will be (Quarantelli & Dynes, 1972).

Personal stressors, such as death of a significant other, being laid off a job, or divorce, are like cataclysmic events in that they are powerful and often unexpected. They are different from cataclysmic stressors in that they affect fewer people at a time. The severest impact of personal stressors occurs at the time of and briefly following the event. With the passing of time and effective coping methods, negative effects of the stressful event may be successfully managed.

The repetitive, persistent stressors that are part of our everyday lives are called background stressors (Gatchel & Baum, 1983). Another term used to refer to background stressors is "daily hassles" (Lazarus & Folkman, 1984). This group of stressors seems less powerful and individually do not pose a threat; however, it is thought that their

persistence may lead to severe consequences (Lazarus & Folkman, 1984). The need of coping with them over an extended time period may reduce a person's ability to cope with subsequent stressors. In addition, daily hassles or background stressors may cause a person to deal less effectively with unrelated stressors and interfere with coping with subsequent cataclysmic or personal stressors (Lazarus & Cohen, 1977).

appraisal Primary appraisal involves assessing the nature of events. Secondary appraisal involves assessing the resources which are available to deal with the event (Lazarus, 1966). Coping is thought of as behavior which is designed either to remove the danger or to meet the emotional challenge posed by the stressor, or to do both. The purpose of coping is to return the organism to normal physiological and psychological levels of function and arousal (Lazarus & Folkman, 1984). Appraisal often determines whether or not an event will become a stressor. Lazarus (1966) argued that an event must be appraised as threatening if it is to be a stressor. Once an event is appraised as threatening, one then makes a secondary appraisal of which coping strategy to use.

coping Coping behavior may be of two general types: direct action or problem solving and intrapsychic or palliative. Direct action involves trying to change a person's relationship to the stressor. Examples of direct action include changing the setting, leaving, or seeking

information. Intrapsychic or palliative coping is an attempt to manage the negative emotions accompanying the event and involves reappraisal of the situation or altering one's internal environment through the use of such things as pharmacologic agents, relaxation, or psychological defense mechanisms (Lazarus & Folkman, 1984).

mediators Mediators of stress include such things as predisposing personality variables, social support, and perceived control (Cohen, Lazarus, Moos, Robins, Rose, & Rutter, 1982; Cobb, 1976; Cohen & McKay, 1984; Frankenhaeuser, 1983; Glass & Singer, 1972; Mason, 1975). Social support is the feeling that one belongs, is cared about, and is valued by others (Cobb, 1976). Cobb reviewed research of social support and life stress and concluded that supportive relationships in the workplace or at home can protect the individual from the adverse effects of stress.

Control has been found to be a determinant of stress from a particular situation. The real or perceived ability to determine the outcome of an event refers to control. Perceived or actual control has been studied in occupational settings, and control was found to reduce physiological and psychological symptoms of stress (Frankenhaeuser, 1983). There are several ways in which control may be obtained; for example, predictability is a form of control (Gatchel & Baum, 1983; Glass & Singer, 1972).

Lack of control and powerlessness have been linked to

the "burnout syndrome" (Keane, Ducette, & Adler, 1985). The nurse may feel powerless when, in spite of giving excellent care, the patient does not improve. The unpredictability of sudden changes in the patient's status or in work schedules or needing to work overtime when an emergency occurs at the end of the shift add to the stress of hospital nursing.

Chronic stress. Chronic stress results when stressors or the response to a stressor continue over a long period of time or when stressors are repeatedly encountered. Chronic stressors may not be perceived as being as severe at any given time as are acute stressors, but may require more adaptive responses over time than acute stressors, which may appear to be more severe in the short term. The experience of chronic stress can gradually reduce one's ability to cope (Holmes & Rahe, 1967). Chronic stressors, in addition to taxing coping mechanisms, may contribute to depression, anxiety, hypertension, peptic ulcers, and sudden death (Mears & Gatchel, 1979; Rahe & Lind, 1971).

## STRESS REACTIONS

When a person is unsuccessful in coping with a stressor, the stress response continues and may become pathological rather than adaptive in function. Two of the possible common pathological effects are occupational burnout and the anxiety disorder of post-traumatic stress. Other anxiety disorders and alcoholism are additional pathological responses which may occur.



Burnout. The term "burnout" has been used to describe a process that occurs when a worker is faced with demands of interpersonal relationships and does not cope effectively with the stress of those demands. Burnout lacks a distinct theoretical base as there is no general consensus as to its characteristics (Farber, 1983). Occupational burnout is one response to unrelieved job stress. Burnout is characterized by a feeling of physical, emotional, and mental exhaustion (Maslach, 1979; Pines & Aronson, 1980). Signs of physical exhaustion are chronic fatigue, weakness, and weariness. Accident-proneness, increased susceptibility to illness, frequent headaches, muscle tension in the shoulders and neck, back pain, and changes in eating habits and weight are seen in the "burned out" person. Emotional exhaustion is associated with feelings of depression, hopelessness, and helplessness. Mental exhaustion is seen in a negative attitude toward work, life, and oneself. Dehumanizing attitudes toward clients develop (Pines & Aronson, 1980). Burnout occurs in settings where there are excessive demands (stressors) on persons working in human services. Not everyone who is in a stressful occupational environment will experience "burnout". Individual differences in appraisal and coping styles mediate the burnout syndrome (Pines & Aronson, 1980). A discussion of "burnout" in nurses will be presented in a later section.

Traumatic stress reactions. Traumatic stress reactions are the responses seen at the time of and



immediately following a catastrophic event and are seen as a normal response to a traumatic event. Behavior and thoughts may be disorganized. If a person is effective in coping, the reaction diminishes. If the clinical manifestations of the stress reaction persist and intensify, the diagnostic label of post-traumatic stress disorder (PTSD) may be assigned (Figley, 1985).

Post-traumatic stress disorder. According to the Diagnostic and Statistical Manual (DSM-III), Post-traumatic stress disorder (PTSD) is classified as an anxiety disorder and is the "development of characteristic symptoms following a psychologically traumatic event that is generally outside the range of usual human experience" (American Psychiatric Association (APA), 1980, p. 236). The characteristic symptoms involve a re-experiencing of the traumatic event (intrusive recollections of the event, dreams or nightmares) and psychic numbing or emotional anesthesia (feeling of detachment or estrangement from other people). Along with the characteristic symptoms, two of the following must be present to merit the diagnosis: excessive autonomic arousal, impaired memory, difficulty in concentration, survivors' guilt, or avoidance of activities that bring back memories of the traumatic event. The associated features of depression and anxiety are common (APA, 1980). Events such as war, fire, floods, being a POW, and being hijacked have been studied as precipitant events (Lindy, Grace, & Green, 1984). PTSD among nurses serving in Vietnam has been

studied and will be reviewed in a later section.

Relationship of chronic stress and PTSD. Two groups of investigators have recently introduced the question of chronic stress and its relationship to PTSD (Davidson & Baum, 1986; Schottenfeld & Cullen, 1985). Davidson & Baum studied people living within five miles of the Three Mile Island (TMI) nuclear power station and compared them with residents of Frederick, Maryland, some 80 miles away. Residents of the TMI area reported more frequent and bothersome intrusive thoughts about the damaged reactor. More symptoms of chronic stress and post-traumatic stress were reported by the TMI group. Residents of the TMI area evidenced higher levels of depression, anxiety, and alienation than did the control group. The TMI group had significantly higher levels of norepinephrine and cortisol which reflect stress-related arousal. These higher levels have been found in the TMI group at time periods of seventeen and thirty-four months following the nuclear accident of March 28, 1979 (Rikli, Baum, & Singer, 1985). Long-term stress associated with a powerful event such as the nuclear accident at TMI may be associated with symptoms of post-traumatic stress disorder.

A study of chronic stressors in occupational settings suggested that chronic exposure "may be preferentially recalled as a re-experiencing of the bodily state associated with exposure" (Schottenfeld & Cullen, 1985, p. 201). Findings from one study done in the occupational setting of

the manufacturing of chemicals suggest that chronic exposure, which may not be recognized as a "discrete trauma", can contribute to the development of PTSD (Schottenfeld & Cullen, 1985). Instead of using words to express the re-experiencing, it was found that physical symptoms, such as gastrointestinal complaints, were used to express the bodily state which had been associated with chronic exposure. The authors viewed the reaction as a variant of post-traumatic stress disorder that presents as a somatoform disorder (Schottenfeld & Cullen, 1985).

#### STRESS AND NURSING

The literature of psychology and nursing reflect concern as to the effect occupational stressors have on the personal and professional lives of nurses (Albrecht, 1982; Bailey & Bargagliotta, 1983; Cronin-Stubbs & Schaffner, 1985; Gray-Toft & Anderson, 1981; Keane, Ducette & Adler, 1985; Norbeck, 1985; & Seuntjens, 1982). Stressors inherent in professional nursing in the hospital setting include: shiftwork; difficulties with interpersonal relationships with patients, with families of patients, with personnel in other disciplines; excessive workload; overtime produced by shortages in staff; and dealing with death. An excessive workload, overtime, and shiftwork may contribute to increased fatigue, irritability, and illness.

The nurse may feel overwhelmed by the demands of the job and unable to cope with the stressors. Inability to

cope may result in behaviors such as deterioration of work performance and loss of professional self-esteem and commitment (Fields, Pfifferling, & Royce, 1981). For example, a nurse may become less careful with nursing procedures, may feel less enthusiastic about giving direct patient care, and may treat patients in a dehumanizing fashion. Symptoms of affective disorders, anxiety disorders, or alcohol and other drug dependence may occur.

Staff nurses in critical care areas were the first subgroup of the nursing profession to be studied. Bailey & Bargagliotti (1983) evaluated studies of perceived psychological stressors among critical care nurses. A profile of the stressors emerged: "(1) conflicts with other health care providers, patients, and their families, (2) workload and inadequate staffing, and (3) dealing with death and dying, and responding to emergencies" (Bailey & Bargagliotti, 1983, pp. 116-117). Vredenburg & Trinkaus (1981), cited in Bailey & Bargagliotti (1983), identified sources of stress of staff nurses in critical care settings to include rapid changes in medical care practice, dealing with death and dying, continuous monitoring of critically ill patients, interpersonal tensions with physicians, other staff nurses and supervisors, irregular work schedules, hospital "politics", and inadequate working conditions. In many cases these stressors are chronic, persisting throughout a nursing career that involves direct patient care.



Stressors in nursing specialties other than critical care have been studied in comparison to stressors found in critical care nursing (Gray-Toft & Anderson, 1981; Kelly & Cross, 1985; J. Maloney, 1982; Numerof & Abrams, 1984). J. Maloney (1982) found that noncritical care nurses had higher levels of anxiety and somatic complaints than critical care nurses. Gray-Toft and Anderson (1981) designed the Nursing Stress Scale (NSS) in an attempt to measure the frequency with which a particular potentially stressful situation is encountered. The scale focuses on problems with death and dying, conflict with physicians, inadequate preparation in dealing with emotional needs of patients and families, lack of staff support, conflict with other nurses and supervisors, excessive workload, and uncertainty concerning the treatment of patients. The findings of the study were that, regardless of the nursing specialty, the most stress came from three stressors: workload, feeling inadequately prepared to meet the emotional demands of patients and families, and death and dying. It was suggested the "structured characteristics of hospital units and personality characteristics of nurses are important in accounting for differential stress among hospital nursing staff" (Gray-Toft & Anderson, 1981, p. 645).

Because sources of stress are numerous, Numerof and Abrams (1984) designed the Nursing Stress Inventory (NSI) to survey several possible stressors. Its scales examine organizational environment, work demands, emotional aspects



of patient care, death-related issues, lack of procedural/administrative support, and supervisor's role. Organizational environment included issues such as lack of feedback regarding job performance and interpersonal conflicts with physicians and nurses. Work demands included physical demands of the job and short-staffing. Emotional aspects of patient care addressed being emotionally responsive to patients and families.

Numerof and Abrams (1984) found that intensive care unit (ICU) nurses experienced stress but not more so than other nursing specialties. Nurses in psychiatry, surgery, and medicine also reported high stress levels. A significant source of stress identified by every specialty was dealing with death (Numerof & Abrams, 1984). Work demands were also significant sources of stress. Years of experience in nursing tended to be inversely related to stress. Older nurses are less stressed than younger ones. This could occur because older nurses have learned how to cope more effectively, because stress susceptible nurses drop out of the profession, or because older nurses have more mediating factors such as greater control of the situation and social support systems. The frequency of the stressful event was found to be important in looking at the impact of the stressor.

Kelly & Cross (1985) studied stress and coping behaviors in registered nurses assigned to ICU and medical-surgical wards. They used a scale that listed five clusters

of variables of stress: patient-related, environmental, management-related, interpersonal, and knowledge and skills. Significant differences between the ICU and the ward nurses on two of the clusters were found. The ward nurses reported more stress from environmental factors, which included such things as noise level, physical environment, and work space. The other significant source of stress was that of management-related issues. The ward nurses reported higher stress than the ICU nurses resulting from inadequate staffing.

#### STRESS REACTIONS REPORTED IN NURSES

"Burnout" and post-traumatic stress disorders have been investigated in nurses (Cronin-Stubbs & Brophy, 1985; Cronin-Stubbs & Schaffner, 1985; Keane, Ducette, & Adler, 1985; Paul & O'Neil, 1983; Schnaier, 1982, cited in Carney, 1985; Stretch, 1984; Stretch, Vail, & Maloney, 1985). "Burnout", while not the primary focus of this study, is important in that it is the term used in the nursing literature to describe a long-term occupational stress reaction (Jacobson, 1983). Recall that "burnout" is described as a slowly developing syndrome that involves maladaptive psychophysiological, psychological, and behavioral reactions to occupational stressors. Responses and behavior of the "burned out" nurse include such things as extreme fatigue, chronic colds, ulcers, emotional exhaustion, negative job attitude, loss of commitment, loss



of concern for and withdrawal from patients, decreased self-esteem, unsafe nursing practice, tardiness, absenteeism, abuse of alcohol and drugs, and changing employment.

In addition to occupational factors, personal stressors and lack of social support may contribute to "burnout" (Cronin-Stubbs & Schaffner, 1985). Nurses working on critical care units, burn units, and oncology units have been identified as being at high risk for developing "burnout" (Storlie, 1979). Yet there are conflicting data as to whether or not critical care and/or intensive care areas differ in the incidence of "burnout" as compared to nurses working in noncritical and/or nonintensive care settings (Keane, Ducette, & Adler, 1985).

Variables that can serve as mediators of stress have been identified as a way to explain the conflicting findings of studies comparing stress of ICU and nonICU nursing. There are several aspects of the ICU that may mitigate stress: esprit de corps, special training, longer orientation, status of having a "glamorous" job, collegiality with physicians, easier access to physicians when needed, limited presence of families due to restricted visiting hours, and opportunity to build up defense mechanisms against constant suffering and death (Jacobson, 1983). The presence of such factors could reduce the nurses' perception of stress.

Post traumatic stress, a concept described above, may prove particularly useful in studying the stress reactions

of nurses. Studies have been done to determine the prevalence of chronic and delayed PTSD in Vietnam era veterans (Arnold, 1985; Keene, 1985; Stretch, 1984). Stretch (1984) conducted a study to investigate the prevalence of PTSD in Vietnam veterans who were still on active duty, members of the reserves, and civilians. The active duty sample consisted of 238 respondents which was a 53% response rate. The reserve sample consisted of 667 which was a 73% response rate. The civilian sample consisted of 499 which was a response rate of 50%. The prevalence rates were: 5.1% for the active duty, 10.9 % for the reservists, and 32% for the civilians. Studies sponsored by the Veterans Administration cite rates that range from 10-40% in combatants (Keene, 1985; Arnold, 1985).

The prevalence of post traumatic stress disorder in nurses assigned to Vietnam has been studied (Paul & O'Neil, 1984; Schnaier, 1982, cited in Carney, 1985; Stretch, 1984; Stretch, Vail, & Maloney, 1985). It was found that noncombatants were affected by the perceived danger and exposure to the violent and destructive aftermath of combat and that such exposure may have contributed to the development of post-traumatic stress symptoms.

Of particular relevance to this study is the work of Stretch (1984), who compiled a data base from Army Nurse Corps officers on active duty at the time of the study. The sample consisted of 361 Army Nurse Corps officers (61% female) who served in Vietnam and 351 Army Nurse Corps

officers (70% female) who were on active duty during the Vietnam conflict but who were not assigned to Vietnam. No sex differences were found in the PTSD rates, which averaged 3.3% for Vietnam nurses (3.2% for females and 3.5% for males). There was a significant difference in the PTSD rate of 3.3% for nurses assigned to Vietnam and a PTSD rate of .85% for nurses that were not assigned to Vietnam. The significant difference addressed the issue of the PTSD rate not being from activities of nursing but rather from the location in which the nurse was. The 3.3% rate of PTSD for nurses assigned to Vietnam was not significantly different from the rate of 5.1% found in non-nurse male Vietnam veterans. The rate of PTSD found in non-nurse active duty soldiers who served elsewhere during Vietnam was 2.3%. The figures of 3.3% and 5.1% may be low in that they represent self-selection. If a person was not functioning properly due to emotional difficulty, he/she may have resigned or may have been released from active duty.

The frequency and repetition of a stressor contributes to the magnitude of the stress reaction (Gatchel & Baum, 1983). Burn nurses have frequent exposure to the suffering, disfigurement, and death of their patients, and frequently perform procedures such as dressing changes and debridement which are extremely painful for the patients. The effect of the chronic exposure to the disfigurement and death has yet to be studied in burn nursing. Does such chronic exposure to disfigurement and death contribute to



the co-occurrence of the symptoms associated with post traumatic stress and chronic stress?

## STRESS AND BURN NURSING

The burn nurse faces the stressors that are commonly found in the other areas of nursing in addition to the stressors that are unique to caring for burn patients. Burn nursing is cited as one of the high risk nursing specialties for developing symptoms associated with stress (Bernstein, 1976; Hinsch, 1982; & McElroy, 1982). Some of the factors that are cited are the complexity of the technical environment, death of patients in spite of receiving expert care, and the disfigurement of the patients. A seriously burned patient requires intensive care skills of both the medical intensive care nursing and the surgical intensive care nursing subspecialties. While there are commonalities in the skills and knowledge base of the two intensive care subspecialties, there are also skills and knowledge bases that are unique to each subspecialty.

The seriously burned patient may be disfigured to the extent that he/she does not appear to be human. The life support equipment, catheters, and lines for nutrition add to the altered appearance of the patient. If the patient survives the physiological crisis, long-term hospitalization and rehabilitation begins. This requires a different focus for the role of the nurse. The patient is no longer in the critical care setting. The nurse caring

for the patient in the rehabilitative phase must be able to address the psychological needs of the patient as well as the physiological needs. At this point the patient knows that he will live and wonders what life will be like. It is a time of emotional turmoil as the patient faces numerous surgical procedures and an aggressive program to regain mobility and strength (Cozean, 1985).

Burn nurses find that, along with the traditional role of being a source of comfort to the patient, they often are a source of pain by their participation in painful procedures. The numerous applications of antimicrobial agents, dressing changes, and debridement done by the nurse are sources of extreme pain. Moans and screams of patients are often heard. Patients may be verbally abusive to the nursing staff. Occupational therapists and physical therapists may also be the target of vented hostility by the patient (Bernstien, 1976; Hinsch, 1982).

Bernstein (1976) investigated the attitudes of nurses as they came to work at a pediatric burn center when it first opened. During the first interview he found the nurses to be enthusiastic and expecting to gain prestige by achieving a high level of technical competence. The nurses expected that their expertise would gain them acceptance by the parents and children. That expectation was unmet because the nurses were seen as the ones causing the pain due to the debridement and dressing changes. The anger and negative reactions of the children toward the nurses resulted in

stress and frustration for the nurses. Many of the nurses reported nightmares or bad dreams that focused on events with patients. Many nurses felt incompetent.

From informal questioning of nurses at several burn centers, Bernstein (1976) found that nurses suggested 18 months as the length of time to be in burn nursing before changing to another area of nursing. Burn nurses are subjected to a role which is often seen as being in conflict with the usual expectation of the nurse to be a source of comfort rather than a source of pain for the patients in the nurse's care (Bernstein, 1976).

#### COPING AND NURSING

Caldwell and Weiner (1981) reviewed the literature regarding coping strategies used by nurses in response to a specific stressor in the work setting. Laube and Stehle's 1978 study (cited in Caldwell and Weiner, 1981) and Oskins (1979) study found that "talking out problems" was the most frequently used coping strategy. The next two most frequently used were "taking definite action" and "drawing upon past experiences" (Oskins, 1979). Oskins (1979) used Lazarus' classifications of direct action and palliative styles and found that direct action styles were being used. It was further observed that, as the situation was perceived as more stressful and as the level of the nurse's anxiety increased, the type of coping method used changed from those of direct action to use of palliative coping strategies

(Oskins, 1979). It seems that as more anxiety is felt by the nurse, it becomes a higher priority to deal with oneself rather than the situation causing the distress.

Other researchers have examined the relationship between stress in nursing and the use of particular coping strategies. Albrecht (1982) found that as "burnout" levels increased among the group of nurses studied, so did the desire to use certain coping strategies. These included such strategies as taking time off, withdrawing from others, and thinking about changing jobs. Albrecht (1982) also found that the group reporting "high burnout" differed in the amount and types of coping strategies used as compared with the group reporting "low burnout". The group reporting "high burnout" used only five strategies, most of which involved escaping the negative environment. The group reporting "low burnout" reported the use of a larger variety of coping mechanisms which reflected a balance of self-oriented (palliative) and relationally-oriented (direct action) strategies.

Stone, Jebesen, Walk, and Belsham (1984) also found that "high burnout" nurses tended to report using fewer effective coping skills. They suggested that having an armamentarium of many effective coping strategies rather than relying on a few specific ones should reduce the risk of developing the symptoms of chronic stress.



## SUMMARY AND PURPOSE OF STUDY

This review of the literature demonstrates that stress has been investigated in hospital nursing by comparing stress reported by nurses in intensive care and nonintensive care settings. This study also will compare intensive care to nonintensive care nurses but will add the specialty of burn nursing. The burn nurse may be at higher risk for developing symptoms associated with both chronic and post traumatic stress due to the chronic exposure of powerful stressors that are unique to burn nursing. Brooke Army Medical Center, Ft. Sam Houston, Texas, and the U.S. Army Institute of Surgical Research (burn unit), Ft. Sam Houston, Texas, provide the opportunity to investigate the issues of stress in several specialties of nursing. In considering the U.S. Army Institute of Surgical Research (burn unit), there are several factors that make a nursing assignment at the burn unit different from an assignment at Brooke Army Medical Center (Kyzar, 1985). Usually a patient population is divided based on ages (pediatric units being separated from adult units) and consists of one type of diagnosis which relates to one type of nursing specialty. Since the burn unit is the only unit of its kind in the Department of Defense, patients of all ages are admitted to the unit. This adds to the complexity of nursing care in that the entire developmental life cycle must be considered. In addition, mortality rates are higher for the burn victims at either end of the life cycle. Because of the nature of

the patients' injuries, the burn unit is kept at a temperature of 82°F with a relative humidity of 78%, which is a physical stressor for the staff. Visible disfigurement often is part of a burn injury, whereas visible disfigurement may not be a factor encountered by other nursing specialties.

This study was designed to compare the prevalence of symptoms associated with chronic stress and post-traumatic stress among a sample of burn nurses that are assigned to the intensive care and nonintensive care areas of a burn unit to the prevalence of these symptoms in control groups drawn from intensive care and nonintensive care nurses. Demographic factors, stress from areas outside the job setting, emotional support, and coping styles were investigated to consider any possible relationship to occupational stress.

In addition to the prevalence of symptoms, personal and occupational stressors were studied. Some of the factors that are thought to influence the outcome of a stressor on a particular nurse are coping style, job satisfaction, and social support (Jones, 1981; Kelly & Cross, 1985; Norbeck, 1985). Therefore, measurements were taken of those factors as well. The relationship of job satisfaction and stress was also studied. Factors useful in predicting the level of stress reported on the Nursing Stress Scale were identified. Two distinct analytic designs were used to test the hypotheses because the number of

subjects did not allow for a 2x2x2 design. The design used to test the first four hypotheses was a 2x2 factorial. The two factors were location of assignment (Burn or Nonburn) and category of nursing care (ICU or NonICU). Because of the type of stressors present in the burn unit, it was expected that the prevalence of symptoms associated with chronic stress and post-traumatic stress would be higher in the group of nurses assigned to the burn unit. It was expected that the NonICU would report more stress than the ICU nurses. The predicted order of ranking from highest prevalence of symptoms to the lowest was Burn NonICU, Burn ICU, NonBurn NonICU, and NonBurn ICU. This prediction is based on the notion that ICU nurses are specially trained and are a more cohesive unit than the NonICU units. The prediction that the burn nurses will report higher levels of stress is based on the literature that cites burn nurses as a group at high risk for developing symptoms related to occupational stress. The type of injuries that a burn patient has resemble injuries seen in combat which may put a person at risk for developing symptoms associated with post traumatic stress disorder.

The other 2x2 factorial design was used to test hypotheses five through eight. The factors of that design were the location of assignment (Burn and NonBurn) and a stress variable determined by a median split of scores on the Nursing Stress Scale (high and low stress groups). It was expected that the prevalence of symptoms associated with

chronic stress and post traumatic stress would be inversely related to the perception of availability of emotional support. It was also expected that the subjects reporting high stress would differ from the subjects reporting low stress in the category of responses used and number of coping strategies used.

#### HYPOTHESES

1. Subjects assigned to the burn unit perceive their assignments to be more stressful than the comparison subjects at Brooke Army Medical Center as reflected by scores on the Nursing Stress Scale. Burn nurses encounter stressors that are similar to those experienced by the comparison group nurses as well as stressors that are unique to burn nursing.

2. Subjects assigned to the burn unit experience more distress and report more somatic complaints than the comparison group as reflected by scores on the Symptom Checklist Ninety-Revised (SCL-90R) measurements of somatic complaints, anxiety, depression, alienation, and the global index of Positive Symptom Total. Persistent stressors can increase occurrence of physical symptoms and decrease feelings of emotional well-being.

3. Subjects assigned to the burn unit experience less job satisfaction than those nurses assigned to Brooke Army Medical Center as reflected by lower scores on the Index of Work Satisfaction. The amount of stress experienced is



inversely related to job satisfaction, and as a result, higher stress at the burn unit one would expect to find decreased job satisfaction.

4. Subjects assigned to the burn unit would have a higher prevalence of symptoms associated with post-traumatic stress than the comparison group as reflected by higher scores on the Impact of Event Scale. Burn nurses care for patients who resemble patients seen in combat, offering more exposure to disfigurement.

5. The subjects reporting high stress based on a median split of scores on the Nurses Stress Scale (NSS) will perceive themselves as having less access to emotional support as reflected on the Perception of Access to Emotional Support than will the subjects reporting low stress. Emotional support has been found to be a mediator of stress. Thus, a person who feels he/she has emotional support does not report as much stress as he/she would in the same situation without the feeling of having emotional support.

6. The subjects reporting high stress based on a median split of scores on the NSS will use less variety of coping responses as measured by the Oskin Situational Stressors and Coping Methods Inventory. When experiencing high stress a person may become rigid and use less of a variety of coping methods.

7. The group of the burn unit subjects reporting high stress will use more of the palliative responses of

coping than the group of the burn unit subjects reporting low stress. As stress increases, dealing with the discomfort of what one is experiencing becomes the highest priority. Palliative methods tend to be used under conditions of high stress. In conditions of low stress a variety of responses from the direct and palliative methods are used.

8. The subjects reporting high stress based on a median split of scores on the NSS will report greater use of alcohol as reflected by more frequent endorsement of item #21 on the Coping Methods Inventory and will have higher scores on items #4 and #11 of the Manipulation Check Questionnaire. Increased use of alcohol is associated with unrelieved stress, and as a result the person may become impaired.

## Methods

This study investigated the presence of symptomatology associated with chronic stress and post-traumatic stress in intensive care and nonintensive care setting of a burn unit and a medical center. Psychosocial variables such as demographic data, job satisfaction, access to emotional support, stressors outside the job setting, and coping styles were investigated to determine their relationship to self-report measures of occupational stress.

### Subjects

All civilian and military registered nurses at the U.S. Army Institute of Surgical Research (burn unit) and Brooke Army Medical Center who had been assigned for at least two months to the intensive care areas of medical, surgical, and pediatric nursing specialties and nonintensive care areas of medical, surgical, and pediatric nursing specialties were asked to participate. The study group was composed of civilian and military registered nurses assigned to the Burn Unit, Fort Sam Houston, Texas. The comparison group was composed of civilian and military registered nurses assigned to selected wards of Brooke Army Medical Center. The burn unit has two areas, intensive care (ward 14A) and nonintensive care (ward 14B). Both the burn unit and Brooke Army Medical Center are located at Ft. Sam Houston, Texas. The burn unit is physically located in Brooke Army Medical Center but does not come under the command of Brooke Army Medical Center.

Fifteen registered nurses out of the twenty-one

registered nurses eligible for the study assigned to the intensive care areas at the Burn Unit and seven registered nurses out of the eight registered nurses assigned to the nonintensive care ward of the burn unit participated in the study. The response rate from the Burn ICU group was 71.4% compared to the 87.5% response rate from the Burn NonICU group. The response rate of the two Burn groups combined was 75.9%.

The comparison group was composed of the civilian and military registered nurses assigned to three intensive care areas: pediatric (ward 42C), medical (ward 43E), and surgical (ward 13A) and to three nonintensive care areas: pediatric (ward 42D); medical represented by cardiology-oncology (wards 43G and 43H); and surgical represented by orthopedic (wards 43C and 43D) and general surgery (ward 13B) of the Brooke Army Medical Center. Forty-one out of 49 registered nurses working in the intensive care areas and 37 out of 45 working in the nonintensive care areas responded to the questionnaires. The response rate of the ICU registered nurses at the Brooke Army Medical Center was 84%, and the response rate of the nonintensive care areas was 83%, resulting in an overall response rate of 82.9%.

A comparison group was necessary for the study to determine if the burn nurses experience the development of stress related symptoms merely because of the occupational stressors found in all of nursing or if the stress of burn nursing is peculiar to burn nursing. In addition, the issue



of stress in ICU nursing compared to stress in NonICU nursing was investigated since previous studies have resulted in conflicting findings.

The comparison group was selected because nurses in it differ primarily in that they do not perform nursing care of burn patients but do resemble the experimental group in many other characteristics. For example, both the study and the comparison groups are comparable with respect to geographic location and have both military and civilian registered nurses assigned to the wards. In addition, both the study and the comparison groups care for a variety of patients with respect to age, category of nursing care needed (intensive vs. nonintensive), and type of nursing specialty involved (medical, surgical, and pediatric). Burn nursing involves the application of medical, surgical, and pediatric nursing skills (approximately one-third of the patients on the burn unit are pediatric). The nonintensive care wards used for the comparison group were selected because they are the wards to which patients from the intensive care areas are transferred. The orthopedic wards were selected because they closely resemble the type of care given on the nonintensive ward of the burn unit. The orthopedic wards and the nonintensive care ward of the burn unit are similar in the average length of stay of the patient. In addition, many of the burn patients also have orthopedic injuries as a part of the injuries sustained at the time of the burn injury. The assumption that death

occurs frequently on the burn unit resulted in the selection of the cardiology-oncology wards to add the element of dealing with issues of death and dying. Nurses from the selected wards were then assigned to one of four groups based on a 2 x 2 design of location of assignment (Burn or NonBurn) and category of nursing care (ICU or NonICU).

### Setting

The burn unit is divided into two wards which are intensive care (14A) with a capacity of 16 beds and nonintensive care (14B) with a capacity of 24 beds. Brooke Army Medical Center is a major medical center of the Army and has a capacity of 800 beds. The intensive care areas of Brooke Army Medical Center used as part of the comparison group have 27 beds (13A-10 beds, 42C-7 beds, 43E-10 beds). The nonintensive care wards of Brooke Army Medical Center used as part of the control group have 182 beds (13B-30 beds, 42D-25 beds, 43C-38 beds, 43D-28 beds, 43G-26 beds, 43H-35 beds).

### Procedure

Registered nurses were recruited by the investigator going to each ward on all three shifts during the first three days of the ten-day period the study was conducted. Going to the wards on three consecutive days for all three shifts was necessary in order to contact each nurse one time. Each registered nurse was seen individually to be given an explanation of the study. See Appendix A for a copy of the Volunteer Agreement used in the study. The

registered nurses were told that the study was being done on a variety of wards in order to compare aspects of the nursing care environment. If the person indicated a willingness to be in the study, a questionnaire packet was given to him/her. Participation in the study was voluntary and responses were confidential. Informed consent was obtained. Subjects were instructed to complete the questionnaires away from the work setting and not to discuss responses with the other subjects. The investigator met with each subject individually at the worksite to collect the completed questionnaires. The investigator was at the study site for ten days. On the last day the investigator was at the study site, addressed and stamped envelopes were given to those subjects who said they wanted to participate but had not yet completed the questionnaires. The subjects were given the instructions to mail the questionnaires within two weeks if they wanted to be included in the study.

### Measures

Demographic data, identification of personal and occupational stressors, coping strategies, job satisfaction, social support, and symptoms associated with post-traumatic stress and chronic stress were measured through self-report questionnaires.

Demographic data that were collected included sex, age, years of nursing experience, marital status, and previous nursing assignments. See Appendix B for the description of the demographic characteristics of the

subjects. A copy of the background assessment tool is included in Appendix C. This particular information is important because years of nursing experience, social support (operationalized as perception of emotional support), and competence have been shown to affect the way one deals with occupational stress (J. Maloney, 1974).

Stress. The general stress level was assessed by administration of the Recent Life Change Questionnaire (Rahe, Ryman, & Ward, 1980), the Symptom Checklist 90-R (Derogatis, 1977), and the Perceived Stress Scale (Cohen, Kamarckj, & Mermelstein, 1983). The Life Change Events Scale reflected what had happened in the past two years that could affect responses to the assessment of perceived stress. The two-year time period was split into six-month intervals and the subject was asked to mark the column that corresponded to the time period in which any particular event occurred. The amount of life change has been shown to correlate with the onset of illness (Garrity & Marx, 1979; Holmes & Masuda, 1974; Holmes & Rahe, 1967; Rahe, 1975; Rahe, Ryman, & Ward, 1980). The number of life change events endorsed during a specified period of time reflects the life change score and the stressors encountered outside of the occupational setting. Scores are indicative of how much risk is present.

The Symptom-Checklist 90-R (SCL90-R) is a global measure of the number of symptoms experienced in the areas of somatic distress, concentration problems, interpersonal sensitivity, depression, anxiety, anger, fearfulness,



alienation, and suspiciousness. The subjects indicated to what degree the listed symptom had bothered them during the previous two weeks. The subscales of depression and anxiety were used to operationalize two of the symptoms studied since they are commonly associated features of post-traumatic stress. Convergent validity has been established by correlating scales of the SCL-90R with the Minnesota Multiphasic Personality Inventory (Derogatis, Rickels, & Rock, 1976).

The Perceived Stress Scale (PSS) is a fourteen-item self-report instrument which measures the degree to which one's life situations are appraised as stressful (Cohen, Kamarck, & Mermelstein, 1983). It measures the extent to which one finds aspects of life to be unpredictable, uncontrollable, and overloading. The PSS has been found to have test-retest reliability of .85. The validity of the instrument was addressed by determining the correlation of PSS with life event scales.

Occupational factors. The Nursing Stress Scale is used to determine the frequency with which the nurse deals with thirty-four potentially stressful situations while working. The scale is composed of seven subscales: death and dying, conflict with physicians, inadequate preparation, lack of support, conflict with other nurses, workload, and uncertainty concerning treatment. Test-retest reliability was 0.68 or greater for all the subscales of the instrument. Validity was established through correlation of the total

score on the Nursing Stress Scale with measures of trait anxiety, job satisfaction, and nursing turnover, which are measures related to stress (Gray-Toft & Anderson, 1981).

The Index of Work Satisfaction measures job satisfaction. It is a forty-eight item Likert scale that looks at seven factors: pay, autonomy, task requirement, administration, interaction, professional status, and doctor-nurse relationship. The subject rates each item on a seven-point scale according to the level of agreement from 1, which is strongly agree, to 7, which is strongly disagree. Internal reliability of .912 was found using Cronbach's alpha coefficient of reliability. Face validity was established using factor analysis (Stamps, 1978). The investigator selected thirty-nine items from the seven scales to be used. The questionnaire was written for use at civilian hospitals so some of the items did not apply in the military hospital setting. The reliability of the altered form of the questionnaire has not been established.

Nurses' perceptions of their patients were assessed by a twelve item questionnaire developed by the investigator. The Manipulation Check Questionnaire was used to test the assumption that patients at the burn unit are more disfigured than the patients at the selected Brooke Army Medical Center wards. The existence of a perception that there is a greater frequency of deaths on the burn unit than Brooke Army Medical Center wards was investigated by the item that stated "death occurs frequently on my ward".

A copy of the tool is included in Appendix D.

Post-traumatic stress symptoms (PTSS). Prevalence of symptoms associated with post-traumatic stress were measured with the Horowitz Impact of Event Scale. The Horowitz (1979, 1983) Impact of Event Scale (IES) assesses the current subjective distress for any life event. The IES uses items that cluster into the two response sets of intrusion and avoidance. These two response sets were chosen because they were found to be frequent in subjective reports of psychological reaction to stress. They consist of fifteen items which are in reference to a specified traumatic event and the frequency of occurrence of each of the fifteen items during the past seven days (Horowitz, Wilner, & Alvarez, 1979). The IES is directly related to the measurement of post-traumatic stress disorder since the DSM-III describes experiences of intrusion and avoidance of feelings related to a serious life event as central diagnostic features (Zilberg, Weiss, & Horowitz, 1982). The reliability of the total scale is 0.86 and the internal consistency (calculated using Cronbach's Alpha) was 0.78 for intrusion and 0.82 for avoidance. Correlation between intrusion and avoidance subscale scores was 0.42, which is evidence that the two subscales are associated but are not identical (Horowitz, Wilner, & Alvarez, 1979).

Coping. Coping with the stressful nursing environment is essential if the nurse is to prevent a stress reaction and deliver quality care. It is important that the

relationship of coping strategies in the nursing environment and stress is studied to see which strategies are effective and do not interfere with functioning (Caldwell & Weiner, 1981). Oskins (1979) devised an evaluation tool which consists of twelve potentially stressful events in an intensive care setting and a list of twenty possible coping strategies. The respondent indicated which strategy would be used with each situation. In addition, there are four questions to be answered regarding each of the twelve situations. Ten situations from Oskins' twelve were used. Two of the situations were deleted from this study because they were applicable only to an intensive care setting. An additional coping strategy, "the use of alcohol", was added to the twenty coping strategies. This was done as a gross screening device for alcohol use since alcohol abuse is one diagnosis seen as an outcome behavior of Post-Traumatic Stress Disorder. Each coping strategy was classified independently by three judges as either a direct or a palliative method based on the framework of Lazarus and Folkman (1984). The number of each of the two methods used and the overall number of different coping strategies used was compared between groups.

Social support has been demonstrated to decrease the effects of occupational stress in nurses (Carney, 1985; Cronin-Stubbs & Brophy, 1985; Norbeck, 1982; Stretch, 1985; & Yasko, 1983). Social support has also been seen to mediate stress of a man-made disaster (Fleming, Baum,



Gisriel, & Gatchel, 1982). Emotional support, which is one major dimension of social support, is often used to measure social support (Jayarante & Chess, 1984), and was so utilized in the present study. The questionnaire used was the Perception of Access to Emotional Support, a six-item scale which measures perceptions of the extent to which emotional support systems are available (Fleming, Baum, Gisriel, & Gatchel, 1982). The questionnaire has a reliability alpha of 0.82 and 0.70 on test-retest. The six items are responded to on a seven-point scale, which is anchored with strongly disagree and strongly agree.

#### Data Analysis

Independent variables were the location of assignment (Burn or NonBurn), category of nursing care needed (ICU or NonICU), and the assignment to high or low stress groupings based on a median split of the score on the Nursing Stress Scale (NSS). Since the total number of subjects in the Burn NonICU was seven, a 2x2x2 design of location of assignment, category of nursing care needed, and stress level could not be used. Instead, two separate 2x2 designs were used to test the hypotheses. Hypotheses one through four and the assumptions relating to the unique environment of the burn unit were tested using the factors of location of assignment and category of nursing care. Hypotheses five through eight were tested using the two factors of location of assignment and level of stress based on the median split of the total score of the NSS.

The attributes (dependent variables) were scores on the SCL-90R subscales of somatic complaints, anxiety, depression, and alienation; the Impact of Event Scale; Perception of Access to Emotional Support; Index of Work Satisfaction; Situational Stressors and Coping Inventory; Recent Life Change Questionnaire; Perceived Stress Scale; and demographic data. Demographic data collected included age, sex, marital status, years experience as a registered nurse, and previous assignments. Previous assignments were used to insure that a Brooke Army Medical Center nurse had never been assigned at the burn unit. One civilian subject from a nonintensive care area of Brooke Army Medical Center was excluded from data analysis because of recent transfer to Brooke Army Medical Center from the burn unit.

The assumption inherent in this study is that nurses assigned to the burn unit were more frequently exposed to death of patients and to disfigured patients than were the nursing staff of Brooke Army Medical Center. This assumption was tested by a questionnaire developed by the investigator. Questions relating to the use of alcohol were on the questionnaire used to screen for alcohol use. Analysis of Variance (ANOVA) were used to analyze the responses to questions on temperature of the ward, disfigurement, and death.

Multiple regression analyses were used to study the relationship of psychosocial variables, group assignment, and the cross products of those two sets of variables to the

contribution of the variance of the scores on the NSS and the PSS.

## Results

The purpose of this study was to determine the presence of symptoms associated with post-traumatic stress and chronic stress in registered nurses assigned to a burn unit. A group of registered nurses working in areas other than the burn unit was used as a comparison group to allow a determination of stress due to burn nursing versus stress in nursing per se. It was expected that the burn nurses would report more symptoms of stress and a lower level of job satisfaction than would the comparison group. Further, a number of psychosocial variables were expected to be associated with these symptoms of stress.

The design used to test hypothesis one through hypothesis four was a 2x2 factorial with location of assignment (Burn or NonBurn) and category of nursing care (ICU or NonICU) being the two factors. The number of subjects in each group used to test hypothesis one through four is presented in Table 1.

---

Table 1  
Number of Subjects in Each Group  
Testing Hypotheses One through Four

BURN	
ICU	15
NonICU	7
NONBURN	
ICU	41
NonICU	37

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The design used to test hypothesis five through hypothesis eight was a 2x2 factorial with the location of assignment (Burn or NonBurn) crossed with the median split of score on the Nursing Stress Scale (high stress or low stress). The number of subjects in each group is presented in Table 2.

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Table 2  
Number of Subjects in Each Group  
Testing Hypotheses Five through Eight

BURN	
High	8
Low	11
NONBURN	
High	37
Low	31

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#### COMPARABILITY OF GROUPS

Since assignment of the subjects to work areas is not done on a random basis, it was necessary to test the comparability of the groups. Comparability of groups was measured by analyzing 2x2 contingency tables via chi-square tests for the distribution of sex, mix of military and civilian nurses in each area, and marital status. Chi-square analysis found no significant difference on the variable of marital status. The groups differed in the proportion of males to females in each group, so the sex of the subject was used as a variable in the multiple

regression equations used to predict the total score of the NSS and the PSS. Out of the total 100 subjects in the study, 23 were male. While the distribution of males was different in the four groups, chi-square analysis did not find the difference to be significant.

Chi-square analysis found no significant difference in the mix of military and civilian nurses in each group. However, it was found that military and civilian nurses did differ in age and years of experience. A one way analysis of variance of age by military/civilian status revealed a significant difference between the military and civilian nurses  $F(1,96)=40.78, p < .001$ . The mean age of the military nurses was 32.40 while the mean age of the civilian nurses was 42.17. A one way analysis of variance of number of years nursing experience among military and civilian subjects revealed significant differences between the military and civilian nurses  $F(1,97)=50.12, p < .001$ . The military nurses had a mean of 5.95 years experience as a registered nurse while the civilian nurses had a mean of 16.14 years experience as a registered nurse. A two way ANOVA for age by the combination of location of assignment and category of nursing care was used to test comparability of the groups.

A two way ANOVA for years of experience as a registered nurse by location of assignment and category of nursing care was used to test comparability of the groups on the factor of years of experience as a registered nurse.

No significant differences were found with regard to age and years experience as a registered nurse in regard to the combination of location of assignment and category of nursing care. Means of the ages and years of experience as a registered nurse are presented in table 3.

Table 3

Mean of Age and Years of Nursing Experience by Groups

	Burn ICU	Burn NonICU	NonBurn ICU	NonBurn NonICU
AGE	38.7	38.1	35.6	36.2
EXP	10.6	12.1	10.4	9.6

In conclusion, no statistical significance was found between the groups on the factors of age, years of nursing experience, marital status, the proportion of male to female nurses in each group, and the proportion of civilian to military nurses in each group. The possibility exists that other factors could differ or that the nonsignificant differences could cumulate. The analyses of those other factors are addressed in the following paragraphs.

#### HYPOTHESES TESTING

Hypothesis one. Hypothesis one stated that nurses assigned to the burn unit would perceive their assignments to be more stressful than the comparison subjects at Brooke Army Medical Center as reflected by scores on the Nursing

Stress Scale. The mean scores are presented in Table 4.

Table 4  
Mean Score of NSS by Group

	BURN		COMPARISON		p
	ICU	NONICU	ICU	NONICU	
NSS Total score	36.3	33.8	45.5	41.5	.05*
SUBSCALES of NSS					
workload	9.40	8.80	10.57	10.45	NS
death	8	8	9.75	9.08	NS
no preparation	2.47	3.29	3.39	3.57	NS
no support	2.53	1.86	2.88	2.83	NS
treatment plan	4.93	4.86	6.07	5.61	NS
conflict with dr	5.87	5.71	6.77	5.89	NS
conflict with nurse	3.14	2.71	6.56	4.30	.006* .019#

\* significant for burn

# significant for ICU

The higher the mean, the more stress reported.

To test whether there were differences between Burn and NonBurn nurses on reported stress, an ANOVA was done. The ANOVA for the total score on the Nursing Stress Scale showed a significant main effect of assignment  $F(1,83)=3.966$ ,  $p=.05$ . However, the difference was in the direction opposite to that predicted, as both ICU and NonICU of the NonBurn groups reported more stress than the ICU and NonICU of the Burn groups. Of the seven subscales of the Nursing Stress Scale, the only one for which significant differences were found was the conflict with other nurses.



Main effects of both location of assignment  $F(1,95)=8.02$ ,  $p=.006$ , and category of nursing care  $F(1,95)=5.68$ ,  $p=.019$  were significant, showing that nurses assigned at Brooke Army Medical Center reported more conflict with other nurses than did the burn unit nurses. Hypothesis one was rejected.

Hypothesis two. Hypothesis two stated that nurses assigned to the burn unit experience more distress and report more somatic complaints than the control group as reflected by scores on the SCL-90R measurements of somatic complaints, anxiety, depression, alienation, and the global index of positive Symptom Total. The means are presented in Table 5.

Table 5  
Mean of SCL-90R Subscales by Group

	BURN		COMPARISON		p
	ICU	NONICU	ICU	NONICU	
Depression	.48	.68	.82	.96	NS
Somatization	.31	.23	.48	.53	NS
Alienation	.20	.10	.22	.33	NS
Anxiety	.30	.21	.48	.60	.05*
PST	22.20	25.29	29.02	33.68	NS

\* significant for burn

The higher the mean, the more distress reported.

To test whether there were differences between the Burn and NonBurn nurses on reported symptoms of four

subscales of the SCL-90R, an ANOVA on each of the subscales by location of assignment and category of nursing care was used. Only one subscale, that of anxiety, showed significant effects. The main effect for location of assignment was significant  $F(1,96)=3.9$ ,  $p=.051$  with the NonBurn nurses reporting more anxiety than the Burn nurses, a finding opposite in direction to the hypothesis.

Subscale differences for depression  $F(1,96)=3.317$   $p=.07$  and somatization  $F(1,96)=3.561$ ,  $p=.062$  approached significance with the scores of the NonBurn nurses being higher than the Burn nurses. The alienation subscale and the global index of symptom reporting, called Positive Symptom Total (PST), showed no significant differences. Hypothesis two was rejected.

The correlation matrix of these subscales is presented in Table 6.

Table 6  
Correlation Matrix of SCL-90R Scales

	SOM	DEP	ANX	ALIEN
PST Somatization (SOM)				
Depression (DEP)	.6608 <sup>^</sup>			
Anxiety (ANX)	.7238 <sup>^</sup>	.7811 <sup>^</sup>		
Alienation (ALIEN)	.6711 <sup>^</sup>	.7007 <sup>^</sup>	.7261 <sup>^</sup>	
Positive Sx Total (PST)	.7315 <sup>^</sup>	.8429 <sup>^</sup>	.8210 <sup>^</sup>	.7275 <sup>^</sup>

<sup>^</sup>significant at  $p=.001$

Hypothesis three. Hypothesis three stated that nurses assigned to the Burn Unit experience less job satisfaction than those nurses assigned to the NonBurn areas and this would be reflected by higher scores on the Index of Work Satisfaction. Hypothesis three was further differentiated and the subscales of the Index were analyzed. The means for these measures are presented in Table 7.

Table 7  
Mean Score of Index of Work Satisfaction

	BURN		COMPARISON		p
	ICU	NONICU	ICU	NONICU	
IWS	154.54	133.75	151.51	143.84	NS
Pay	14.7	16.7	22.24	19.03	<.001* .004#
Prof	21.53	21.0	22.6	22.8	NS
Inter	29.38	26.29	22.1	22.22	.002*
Admin	49.47	41.17	49.54	42.85	.001#
Dr Nurse	15.07	10.29	9.37	9.41	<.001* .028/
Autonomy	20.0	16.29	17.02	13.70	.022* .001#
Task	9.13	8.40	8.61	11.49	<.001# .023/

\* significant for burn

# significant for ICU

\ significant for interaction

The higher the score, the more the dissatisfaction.

To test whether there were differences between the Burn and NonBurn nurses in reported job satisfaction, an ANOVA was used to analyze the total score on the Index of Work Satisfaction and each of its seven subscales. No significant differences were found for the total score or for the subscale that measured professional status. Hypothesis three was rejected for the total score and the subscales of pay, professional status, and administration. Hypothesis three was accepted for the subscales of social interaction and autonomy.

The pay subscale showed significant effects for location of assignment  $F(1,93)=19.35$ ,  $p < .001$  and category of nursing care  $F(1,93)=4.16$ ,  $p=.044$  and for the interaction of location of assignment and category of nursing care  $F(1,93)=3.79$ ,  $p=.05$ . In looking at the significant main effects, the Burn nurses reported more satisfaction with pay than the NonBurn nurses, and the NonICU nurses reported more satisfaction with pay than did the ICU nurses.

This finding is consistent with the differences in the actual pay scales of the civilian nurses. There is a difference in the pay grade used to determine the salary for the civilian nurses. All of the nurses assigned to the BurnICU are GS 11's and the nurses assigned to the Burn NonICU are GS 9's. Both ICU and NonICU nurses assigned at the NonBurn areas are GS 9's except for those who are head nurses. Two of the wards in this study from Brooke Army



Medical Center have civilian head nurses who are GS 11's.

The simple effects revealed in the significant location of assignment and category of nursing care interaction were further analyzed with the Newman-Kuels procedure for post hoc comparisons of mean score on the subscale of pay by group. Results of the Newman-Keuls analysis revealed that the Burn ICU group was not different from the Burn NonICU group but was significantly more satisfied with pay than the NonBurn ICU and NonBurn NonICU groups. The Burn NonICU group was significantly more satisfied than the NonBurn ICU group only. The NonBurn NonICU group was significantly more satisfied than the NonBurn ICU group only, and the NonBurn ICU group was significantly less satisfied with pay than any of the other groups. Results are presented in Table 8.

---

Table 8

Results of Newman-Kuels for Pay Scale of IWS

MEAN	GROUP NUMBER	1	2	4	3
14.71	BurnICU (1)				
16.71	BurnNonICU (2)				
19.03	NonBurnNonICU (4)	*			
22.24	NonBurnICU (3)	*	*	*	

\* Significant at  $p=.05$

The higher the mean, the less the satisfaction.

---

The social interaction subscale, which measures the

opportunity for formal and informal social contact during duty hours, showed a significant effect for assignment  $F(1,93)=10.197$ ,  $p=.002$ . Burn nurses reported less satisfaction on the interaction subscale than did the NonBurn nurses as was hypothesized. The administration subscale measuring the effect of administration on job procedures was significant for category of nursing care  $F(1,92)=10.998$ ,  $p=.001$ . ICU nurses reported less satisfaction than did the NonICU nurses.

The subscale that measured the amount of interaction between nurses and doctors was significant for location of assignment  $F(1,96)=15.163$ ,  $p < .001$  as well as for the interaction of location of assignment and category of nursing care  $F(1,96)=4.957$ ,  $p=.028$ . The simple effects revealed in the significant location of assignment by category of nursing care interaction were further analyzed with the Newman-Keuls procedure for post hoc comparison of the mean score on the subscale by group. The Burn ICU group was significantly less satisfied with interactions between doctors and nurses than the Burn NonICU, NonBurn ICU and the NonBurn NonICU groups. Results are presented in Table 9.

The autonomy subscale measuring the amount of job-related independence revealed significant differences for the main effects of both location of assignment  $F(1,96)=5.383$ ,  $p=.022$  and category of nursing care  $F(1,96)=11.082$ ,  $p=.001$ . For the location of assignment factor, NonBurn was the more satisfied. For the factor of

category of nursing care, NonICU was the more satisfied.

Table 9

Results of Newman-Kuels for Doctor/Nurse Interaction Scale

MEAN	GROUP NUMBER	3	4	2	1
9.37	NonBurnICU (3)				
9.41	NonBurnNonICU (4)				
10.02	BurnNonICU (2)				
15.07	BurnICU (1)	*	*	*	

\* Significant at  $p=.05$

The higher the mean, the less the satisfaction.

The task requirement subscale measuring the amount of time related to patient care and administrative work revealed significance for the main effect of category of nursing care  $F(1,94)=15.797$ ,  $p < .001$  and for the interaction of location of assignment and category of nursing care ( $F(1,94)=5.305$ ,  $p=.023$ ). In looking at the main significant effect of category of nursing care, it was seen that the ICU nurses were more satisfied than the NonICU nurses. The simple effects revealed in the significant location of assignment and category of nursing care interaction were further analyzed with the Newman-Keuls procedure. The results of the Newman-Keuls analysis revealed that the Burn ICU group was significantly less satisfied than the NonBurn ICU and the NonBurn NonICU groups. Results are presented in Table 10.

Table 10

Results of Newman-Kuels for Task Scale of IWS

MEAN	GROUP NUMBER	2	3	1	4
8.40	BurnNonICU (2)				
8.61	NonBurnICU (3)				
9.13	BurnICU (1)				
11.49	NonBurnNonICU (4)		*	*	

\* Significant at  $p=.05$ 

The higher the mean, the less the satisfaction.

Hypothesis four. Hypothesis four stated that nurses assigned to the burn unit would have a higher prevalence of symptoms associated with post-traumatic stress than the comparison group as reflected by higher scores on the Impact of Event Scale. Hypothesis four was rejected. The means of the events described by the nurses are presented in Table 11.

To test whether there were differences between the Burn and NonBurn nurses on the two scales of the Horowitz Impact of Event Scale, ANOVA of each of the subscales by location of assignment and category of nursing care was used. Subjects were instructed to think of a stressful event that had occurred at any time in their nursing practice and to then to respond to questions of the instrument based on the last seven days. The avoidance scale showed significant differences for the location of



assignment  $F(1,89)=3.811$ ,  $p=.054$  with the NonBurn nurses scoring higher than the Burn nurses. The intrusion scale did not reveal any significant differences.

Table 11

Mean of IES Scales and Normative Data

	BURN		COMPARISON		p
	ICU	NONICU	ICU	NONICU	
IES Scales					
Avoidance	1.37	.62	1.83	1.53	*
Intrusion	1.57	.53	1.75	1.70	NS

NORMATIVE DATA

	Stress Clinic		Medical Students	
	male	female	male	female
Avoidance	14.1	20.6	4.4	6.6
Intrusion	21.2	21.4	2.5	6.1

A description of the events that were described by the nurses and the number of nurses listing each event are presented in Table 12.

Table 12  
Events and Number of Nurses Reporting Events

	Burn	NonBurn
Questioning of physician's competency	3	4
Conflict with physician re treatment	1	13
Conflict with phy. (other than treatment)	0	2
Death and dying issues	1	20
Conflict with nursing personnel	3	17
Workload-getting appropriate pts.	0	14
Availability of equipment	1	5
Questioning competency of other nurses	2	4
Doubting own competency	2	3
Cardiac arrest/pt. emergency	6	2
Medication error	0	7
Conflict with visitors	0	2

Hypothesis five. Hypothesis five stated that nurses reporting high stress based on a median split of scores on the NSS will perceive themselves as having less access to emotional support as reflected on the Perception of Access to Emotional Support. Means are presented in Table 13.

To test whether there were differences between the Burn and the NonBurn nurses on the Perception of Access to Emotional Support (EMOT), ANOVA was done on the score by location of assignment and median split of the NSS. Recall that in the Methods Chapter a rationale for using the median

split of the total score of the NSS was given. A set of questions addressing the relationship or stress to emotional support and coping, independent of category of nursing care, could be analyzed in this fashion. The ANOVA of the score on Perception of Access to Emotional Support was significantly different across high or low stress groups based on the median split of the NSS  $F(1,79)=6.786$ ,  $p=.011$ .

Table 13

Means of Perception of Access to Emotional Support

STRESS	BURN		COMPARISON		p
	High	Low	High	Low	
	31.14	32.60	26.28	31.70	.011+

+ Significant for stress

The higher the score, the more the perception of support.

In addition, ANOVA was done using location of assignment and category of nursing care. The ANOVA of the score on Perception of Access to Emotional Support yielded a significant difference by the category of nursing care  $F(1,93)=7.735$ ,  $p=.007$ . The mean of Perception of Access to Emotional Support by location of assignment are presented in Table 14. The ICU nurses reported having more emotional support than the NonICU nurses.

Table 14

Means of Perception of Access to Emotional Support  
by Location of Assignment

BURN		COMPARISON		p
ICU	NONICU	ICU	NONICU	
32.92	29.29	31.56	26.51	.007#

# Significant for ICU

The higher the score, the more the perception of support.

Hypothesis six. Hypothesis six stated that nurses reporting high stress, based on a median split of scores on the NSS, would use less variety of coping responses as measured by the Oskins' Situational Stressors and Coping Methods Inventory. Means of the number of total coping responses are presented in Table 15.

Table 15

Mean of Number of Coping Responses Used

	BURN		NONBURN		P
	High	Low	High	Low	
STRESS	6.57	4.60	5.57	4.37	<.001

The greater the mean, the more coping responses used.

Means of the number of only palliative coping responses are presented in Table 16.



Table 16

Number of Coping Responses Used  
by location of assignment and category of nursing care

BURN		NONBURN		P
ICU	NonICU	ICU	NonICU	
5.08	6.14	4.92	5.00	NS

The greater the mean, the more coping responses used.

To test whether there were differences between the Burn and NonBurn nurses on the number of different coping responses used, an ANOVA using location of assignment and category of nursing care was done. No significant differences were found. A second ANOVA using the location of assignment and the assignment of high or low stress based on the median split of the total NSS score was done. The ANOVA of the number of responses found significant differences across high or low stress groups based on the median split of the NSS  $F(1,78)=15.936$ ,  $p < .001$ . It was found that the nurses reporting higher on the NSS were using a greater number of coping responses. This finding is in the opposite direction as to what was hypothesized. Hypothesis six was rejected.

Hypothesis seven. Hypothesis seven stated that the group of burn unit nurses reporting high stress, based on a median split of scores on the NSS, would use more of the palliative responses of coping than the group of the burn unit subjects reporting low stress. To test whether there

were differences between Burn and NonBurn nurses on the type of coping response used based on the median split of the NSS (high or low stress), an ANOVA was done. The means are presented in Table 17.

Table 17

Means of Palliative Responses Used  
stress by location of assignment

STRESS	BURN		NONBURN		p
	High	Low	High	Low	
	2.43	2.2	2.6	1.57	.014

The greater the mean, the more palliative coping responses used.

Oskins' (1979) list of twenty coping responses and one response added by the researcher were given to the nurses. The nurses were also given a list of situations and were asked to indicate which coping response would be used for each situation. It was hypothesized that those subjects reporting high stress would use more palliative coping responses (PAL). ANOVA revealed significance for the main effect of the score on the NSS split  $F(1,78)=6.328$ ,  $p=.014$ , and the hypothesis was not rejected. In addition, ANOVA of the number of palliative coping responses used by location of assignment and the category of nursing care was used. No significant differences were found. The means are presented in Table 18.

Table 18

Mean of Palliative Coping Responses Used  
location of assignment by category of nursing care

BURN		NONBURN		p
ICU	NonICU	ICU	NonICU	
2.62	2.00	1.72	2.36	NS

The greater the mean, the more palliative coping responses selected.

Hypothesis eight. Hypothesis eight stated that the nurses reporting high stress, based on a median split of scores on the NSS, would report greater use of alcohol as reflected by more frequent endorsement of item 21 on the Oskins' Situational Stressors and Coping Methods Inventory and will have higher scores on items 4 and 11 of the manipulation check questionnaire. Means of groups responses to items related to alcohol based on stress by location of assignment are presented in Table 19.

Table 19

Mean of Responses to Alcohol Items

STRESS	BURN		NONBURN		p
	High	Low	High	Low	
Item 21	0	0.1	0	0	NS
Item 4	1.63	2.20	1.43	1.83	NS
Item 11	2.25	2.10	1.84	1.47	NS

To test whether there were differences between the Burn and the NonBurn nurses in the reported use of alcohol, analyses of variance were done separately on item 21 of the

Oskins' Situational Coping and items 4 and 11 of the Manipulation Check Questionnaire. The means are presented in Table 20.

Table 20  
Means of Responses Related to Alcohol

	BURN		NONBURN		<u>P</u>
	ICU	NonICU	ICU	NonICU	
Item 21	.08	0	0	0	NS
Item 4	1.93	1.57	1.60	1.59	NS
Item 11	2.29	1.43	1.72	1.65	NS

Item 21 of the coping responses was "I use alcohol to make me feel better". Items 4 and 11 of the Manipulation Check Questionnaire were "Friends have told me that I am drinking too much" and "Since working here, I am drinking more". No significant differences were found.

#### TESTING OF ASSUMPTIONS

An underlying assumption of this study was that the nurses assigned to the burn unit work in an environment that is unique due to the extensive exposure to disfigured patients and frequent death. In addition, there are the physical factors of temperature and humidity which must be controlled due to the burn patient's inability to maintain the desired body temperature. These factors were tested on an opinion scale devised by the researcher. ANOVA of the 2x2 factorial of location of assignment (Burn or NonBurn) and category of nursing care (ICU or NonICU) was used to



analyze each of the assumptions. Each assumption is described in the following paragraphs.

Temperature. The temperature on the burn unit is held at 82 because burn victims have lost the ability to maintain proper body temperature due to the loss of the integumentary system. Heat lamps are also used based on the needs of the individual patient. An ANOVA of the ratings on the factor of temperature of the unit revealed significance on both items that addressed the effect of the temperature. The means are presented in Table 21.

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Table 21  
Means of Responses to Ward Temperature

	BURN		NONBURN		p
	ICU	NonICU	ICU	NonICU	
Item 2	6.07	5.29	4.68	4.76	.013*
Item 3	6.14	5.57	3.85	4.03	<.001*

The higher the score, the more discomfort reported.

\*significant for burn

---

Item number 2 stating that "The temperature of this unit is uncomfortable" revealed significant main effects of location of assignment  $F(1,95)=6.350$ ,  $p=.013$ . Item number three stating that "The temperature on this unit makes working more of an effort" revealed a significant main effect for location of assignment  $F(1,94)=22.71$ ,  $p < .001$ . From the results of responses to the questions regarding temperature of the unit, temperature (a physical stressor)

is identified as being a factor contributing to making the work more difficult for the Burn nurses but not for the NonBurn nurses.

Disfigurement. Disfigurement was examined by asking nurses to respond to the following three items: "Most patients that I care for are disfigured", "The appearance of the patient's injuries do not affect me", and "Sometimes it is hard for me to look at a patient's injuries". Item number 7, "Most patients that I care for are disfigured" was significant for the main effect of location of assignment  $F(1,95)=68.161$ ,  $p < .001$ . The other two items, numbers 10 and 6, were not found to be significant. Means are presented in Table 22.

Table 22  
Disfigurement

	BURN		NONBURN		p
	ICU	NonICU	ICU	NonICU	
Item 7	6.14	6.00	2.85	2.70	<.001*
Item 10	4.79	3.29	3.61	4.00	NS
Item 6	3.07	3.14	2.56	2.49	NS

The higher the score, the greater agreement with the item.

\*significant for burn

The burn nurses acknowledge that the patients they care for are disfigured but yet report that they are unaffected by the disfigurement. I see this as an indicator that the burn nurses may be using denial regarding their

reactions to the physical appearance of the patients. Socialization into the profession of nursing emphasizes the an approach to patients based on objectivity.

Death. The effect of exposure to death was tested by item 5 "death occurs frequently on our ward". It was significant for the main effect of category of nursing care  $F(1,95)=39.88$ ,  $p < .001$ , but was not significant for location of assignment. Means are presented in Table 23. The assumption that death occurs more frequently on the burn unit was not confirmed by the study subjects.

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Table 23

Exposure to Death

	BURN		NONBURN		p
	ICU	NonICU	ICU	NonICU	
Item 5	6.07	3.14	5.80	3.43	<.001#

The higher the score, the more agreement with the item.

# significant for ICU

---

#### TESTING OF ADDITIONAL VARIABLES

Two additional variables needed to be addressed because their presence could influence the occupational stress and because nurses could differ on these variables. These variables are the score on the Perceived Stress Scale and the number of life events that have occurred during a prescribed time frame.

Perceived Stress Scale. ANOVA of the score on PSS

was done by location of assignment and category of nursing care. Means are presented in Table 24.

Table 24

Mean of the Perceived Stress Scale

BURN		NONBURN		p
ICU	NonICU	ICU	NonICU	
18.57	20.71	22.63	24.72	.053*

\*significant for burn

The higher the score, the higher the stress reported.

ANOVA revealed significance for the location of assignment  $F(1,97)=3.851$ ,  $p=.053$ , but not for the category of nursing care. The NonBurn subjects reported more stress than did the Burn subjects. This was in the same direction as the results of the NSS in which the NonBurn subjects also reported more stress.

Life events. An ANOVA was done on the number of life events that were reported to have occurred in four specific time periods. Means are presented in Table 25. Event1 was the time period of 7-12 months prior to the study. For Event1 the interaction of location of assignment and category of nursing care was significant  $F(1,99)=3.873$ ,  $p=.05$ . The order of groups reporting the highest number of events to the lowest is as follows: Burn NonICU, NonBurn ICU, NonBurn NonICU, and BurnICU. Further findings from Newman-Kuels analyses revealed that no two groups differed significantly from each other. No significant differences



were found for Event2 (0-6 months prior to the study), Event3 (up to 24 months prior to the study), and Event4 (the sum of 0-6 months and 7-12 months prior to the study).

Table 25

Means of Life Events of Specific Time Periods

	BURN		NONBURN		p
	ICU	NonICU	ICU	NonICU	
Event1	4.33	8.86	5.66	5.46	.052\
Event2	6.40	6.86	7.71	8.57	NS
Event3	15.07	23.86	20.93	21.24	NS
Event4	10.73	15.71	13.37	14.03	NS

\significant for interaction

The correlation matrix of the four time periods of the life events, NSS, and PSS is presented in Table 26. The score on the NSS and the PSS had a strong positive correlation, .7097, and was significant,  $p < .001$ . The various periods represented in the life events also had a positive correlation with NSS and PSS but was weaker than the correlation of PSS and NSS. The correlations of the scores reflecting work and nonwork stress were in the expected direction.

Table 26  
Correlation Matrix of NSS, PSS, and Life Events

	NSS	PSS	Event1	Event2	Event3	Event4
NSS		.71 *	.11	.26 *	.25 *	.24 *
PSS			.20	.33 *	.34 *	.35 *
Event1				.19	.64 *	.70 *
Event2					.68 *	.83 *
Event3						.85 *

\*significant at  $p < .01$

Prediction of score on Nursing Stress Scale.

Selected factors were chosen to see what independent variance they account for in the score on the NSS.

Background and psychosocial factors of interest were PSS, Perception of Access to Emotional Support, Event2, sex, and years of nursing experience. These factors were selected because they had been identified as being determinants of stress in other studies relating to stress in nursing (Cronin-Stubbs & Schaffner, 1985; Numerof & Abrams, 1984; Maloney & Bartz, 1985). Three factors of assignment which are referred to as experimental in the discussion of the regression equation were used: Burn/NonBurn, ICU/NonICU, and

the interaction of Burn/NonBurn and ICU/NonICU.

Forward hierarchical multiple regression was used to study the contribution of psychosocial factors and group assignment factors. The interactions of those two categories of factors to the variance of the total score on the Nursing Stress Scale were used in the regression equation only to determine if the eight variables had a stable effect in each of the four groups. Based on a review of the literature and demographic characteristics of the grouping of the subjects, eight variables were selected to be entered in the multiple regression equation to predict score of NSS.

Five of the variables selected were psychosocial factors: score on the Perceived Stress Scale (PSS), the number of life events that had occurred in the previous 0-6 month period (Event2), sex, years of experience as an R.N. (exp), and the score on the Perceived Access to Emotional Support (emot). The other three variables were group assignment factors: location of assignment, category of nursing care, and the interaction of those two factors.

The score on the PSS and the score reflecting the most recent time period on the Recent Life Change Questionnaire were selected to represent events outside the work setting that could affect the stress experienced on the job. The score on the Perceived Access to Emotional Support was used because it has been identified as a mediator of stress. Since the ratio of male to female subjects varied from group to group and since sex differences exist in the

reporting of stress, sex was used as a variable. Since years of nursing experience and the age of the nurse have been found to be significant factors in the reporting of occupational stress, years of nursing experience was used. Age was not used as an additional factor because the correlation of age with years of experience was  $.829$   $p < .001$ . The group of the five psychosocial variables together accounted for 50.6% of the variance. The analysis of variance done as a part of the multiple regression revealed significance for the five variables as a group  $F(5,71)=16.41$ ,  $p < .001$ . Of the five variables used in the equation, PSS was the only variable that was significant at better than the  $p = .05$  level with a significance of  $p < .001$ . Since the one-tailed correlation coefficient from Pearson's correlation for PSS and NSS was  $.71$   $p < .001$ , a multiple regression was done using the remaining four psychosocial variables. It was found that the psychosocial variables of sex, emot, event2, and exp shared variance with PSS. The equation revealed that the unique variance from the score of the PSS accounted for 20% of the variance of the score of the NSS. The four variables as a group accounted for 30.6% of the variance of the score on the NSS. The equation revealed significance for emot  $p=.006$ , event2  $p=.030$ , and sex  $p=.0005$ . Experience was not found to be significant at the  $p=.05$  level. Because these variables have significance when covaried with PSS in an analysis, it can be concluded that PSS has its major effect



(approximately 50% of the NSS variance) because these variables effect PSS directly and NSS through PSS indirectly.

The addition of the next group of variables, Burn, ICU, and the interaction of Burn and ICU, raised the percent to 56.2% (from the 50.6% when only the background variables were used) of the variance accounted for in the scores of the NSS. These three variables are the equivalent to a 2x2 ANOVA, as was used to test hypothesis one through four, with the five background variables removed as covariates. The change in R square in going from eight variables to five variables was .05673 (df=3). The residual used for the increment of eight to five variables was .43747 (df=71). The F ratio of the increment was 3.069 which was significant at better than the  $p$  .05 level.

Covariance has as one of its assumptions that the covariates (PSS, event2, experience, sex, and emotional support) have the same effect in all four groups, i.e., they do not interact with the location of assignment, category of nursing care, and the interaction of location of assignment and category of nursing care. In order to test that the conditions of that assumption were met, the fifteen variables that represented the interaction of the five background variables with the three experimental variables were added to the eight variables and were used in a multiple regression equation. That equation accounted for a total of 65.6% of the variance of the score of the NSS. The

F ratio for the increments of the change of R square from the equation going from twenty-three to eight variables was calculated. The equation entered only twenty of the twenty-three variables. The change in R square was .09357 (df=12). The residual for that equation was .3334 (df=59). The F ratio was 1.336 and was not significant at the  $p$  .05 level. The condition of the assumption of no interaction was met. The five covariate psychosocial variables had the same effect in each of the cells of subjects based on ICU and Burn. There was no interaction so the interpretation of location of assignment and category of nursing care variables is straight forward. It was also found that the psychosocial variables contributed significantly more to the variance in the score of the NSS than did Burn, ICU, or the interaction of Burn and ICU. The correlation matrix of NSS and the five psychosocial variables used as predictors is presented in Table 27.

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Table 27						
Correlation Matrix NSS and Selected Psychosocial Variables						
	SEX	EXP	NSS	PSS	EMOT	EVENT2
SEX		.13	.36 *	.31 *	-.09	.00
EXP			-.09	-.15	.02	-.29 *
NSS				.71 *	-.38 *	.26 *
PSS					-.45 *	.33 *
EMOT						-.04

\*significant at  $p < .01$

Prediction of the score on the Perceived Stress Scale. Since the observation could be made that the PSS measured some areas reported on the NSS, a forward hierarchical multiple regression using PSS as a criterion variable was done. The predictor variables were the four remaining psychosocial variables and the three group assignment variables used in the previous regression.

The group of the four psychosocial variables together accounted for 37.4% of the variance. The analysis of variance done as a part of the multiple regression revealed significance for the four variables of a group  $F(4,88)=13.14$ ,  $p < .05$ . Of the four variables used in the equation, only three were significant at  $p < .005$ . The three that were significant are emot, sex, and event2.

The addition of the three group assignment variables (Burn, ICU, and the interaction of those two variables) to the four psychosocial variables increased the total of variance accounted for to 37.7%. The change in R square in going from 4 to 7 variables was .0035 ( $df=3$ ). The residual used for the increment of change was .6225. The F ratio was .1597,  $df=3,85$  and was not significant at the  $p=.05$  level.

It was determined that psychosocial factors played a greater role in predicting stress than did the factors of assignment. This outcome established the possibility the a profile of the nurse most likely to be stressed could be determined. This would allow for identification of nurses who could benefit from intervention relating to stress

management techniques such as how to establish social support or how to cope with life event changes.



## Additional Results

To aid in the interpretation of the scores on the various instruments, available normative data is presented in this chapter. If normative data has not been established, other studies that have used a particular tool are cited.

### NURSING STRESS SCALE

Since there are no normative data available for the NSS it is difficult to say what the scores mean relative to the magnitude of stress experienced. The assignment of high and low stress was an arbitrary decision based on the median split of the scores. It is possible that the group assigned to high stress is not actually experiencing a high level of stress. One study was found in which the NSS had been used and the mean scores were reported. The study was done in a 1160 bed medical center and involved nursing personnel in the nursing specialties of hospice, surgery, oncology, cardiovascular surgery, and medicine (Gray-Toft & Anderson, 1983).

The mean scores on the NSS are as follows: hospice 84.59, surgery 85.07, oncology 88.71, cardiovascular surgery 91.21, and medicine 94.11. The highest single score in the burn unit and Brooke Army Medical Center nurses was 78. The median score for the entire group of subjects was 41. The mean scores of each group were as follows: Burn ICU 36.3, Burn NonICU 33.8, NonBurn ICU 45.5, and NonBurn NonICU 41.5.

Since generalizability is not established for the scores of the NSS, an interpretation of the meaning of the scores on the NSS being higher in the cited study cannot be made.

#### SYMPTOM CHECKLIST-90 REVISED

Normative data for the SCL90-R have been established, so that allows for the interpretation of the scores reported by subjects in this study (Derogatis, 1977). The anxiety subscale was the only one that differed significantly, and was found to be higher in the NonBurn subjects. Normative data are presented in Table 28. Refer to Table 5 for the participants' scores in this study.

Table 28

#### Normative Data SCL-90R

	Normal Population	Psychiatric Outpatients
Depression	.36	1.79
Somatization	.36	.87
Alienation	.14	.94
Anxiety	.30	1.47
PST	19.29	50.17

The mean scores on the anxiety subscale of the NonBurn subjects were .48 for the ICU and .60 for the NonICU. While the NonBurn scores are above the normal population, they are below the scores of the outpatient population. The mean score of the Burn ICU is .30 which is

at the level of the normal population. The Burn NonICU mean is .21 which is below the mean for the normal population. Both the ICU and NonICU of the NonBurn area are above the scores of the normal population but are below the score of the psychiatric outpatient. The mean score for the NonBurn ICU was .48 and was .53 for the NonBurn NonICU.

On the depression subscale, all of the groups had a mean score that was higher than the normal but lower than psychiatric outpatients. The mean scores on the depression subscale were as follows: Burn ICU .48, Burn NonICU .68, NonBurn ICU .82, and NonBurn NonICU .96.

On the alienation subscale, only the Burn NonICU mean of .10 was below the mean of the normal population. The other three groups were above the mean for the normal population but were below the outpatient mean. The means were as follows: Burn ICU .20, NonBurn ICU .22, and NonBurn NonICU .33.

On the general index of positive symptom reporting, all groups had a mean that was higher than the normal population but was lower than the psychiatric outpatient population. The means were as follows: Burn ICU 22.20, Burn NonICU 25.29, NonBurn ICU 29.02, and NonBurn NonICU 33.68.

In summarizing the comparison of the normative data to scores of the subjects, none of the groups had scores that were at the level of or higher than the normative data of the psychiatric outpatients. On the subscales of anxiety and somatization, the Burn subjects were at or below the

score of the normal population while the NonBurn subjects were above the normal population. On the subscales of depression and positive symptom reporting, all groups of subjects had scores that were higher than the normal population. On the alienation subscale, only the Burn NonICU group was lower than the normal population. These results, taken as a whole, suggest that the subjects are experiencing symptoms associated with stress but the symptoms are not at a level that indicates dysfunction.

#### IMPACT OF EVENT SCALE

The means of two groups studied using the Horowitz Impact of Event Scale are given as a comparison point for the findings of this study. The two groups studied were 66 patients at a stress clinic and 110 medical students after a laboratory experience with a cadaver. The means are presented in Table 29. The means on the intrusion scale of all four groups in this study were less than the means of the medical students and the stress clinic patients.

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Table 29  
Normative Data of IES

	Stress Clinic		Medical Students	
	male	female	male	female
Avoidance	14.1	20.6	4.4	6.6
Intrusion	21.2	21.4	2.5	6.1

---

There were no significant differences of the normative data based on sex of the subject (Horowitz, Wilner, & Alvarez, 1979). The means of all four groups of this study are well below the findings of Horowitz, Wilner, & Alvarez (1979).

#### COPING

The level of stress was described in the literature as having an effect on the type of coping mechanisms one uses, direct or palliative, and the number or different coping behaviors used. It was reported that a person reporting behaviors and symptoms related to a high level of stress would use palliative mechanisms and would have a limited number of coping behaviors. Frequencies of each response selected were done for three different groupings based on location of assignment, category of nursing care, and assignment based on median split of the NSS. Frequencies of the three most frequently selected responses and the percentage of responses that frequency represents in that group are presented in Table 30.

The differences relating to the number of coping behaviors used were not found in this study based on the categories of high stress or low stress formed by a median split of the NSS. It could be that the group labeled as the high stress were really not experiencing a high level of stress based on self-report. The maximum score possible on the NSS is 102 and the minimum score possible on the NSS is



0 with a score of three on an item indicating high stress and 0 on an item indicating no stress. The mean score in this study was 41.91 so it could be that the stress experienced was too low to have a pronounced effect on the number of different coping behaviors used by the subjects.

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Table 30

Frequently Selected Coping Responses  
Frequencies and Percentage of Responses by Group

Group defined by location of assignment

ICU			NonICU		
response #	frequency	%	response #	frequency	%
4	151	30.3	4	112	31.8
10	72	14.5	10	54	15.3
11	72	14.5	11	46	13.1
5	36	7.2			

Group defined by category of nursing care

Burn			NonBurn		
response #	frequency	%	response #	frequency	%
4	47	26.3	4	216	32.2
10	25	14.0	10	99	14.8
11	25	14.0	11	93	13.9
9	15	8.4			

Group defined by median split of the NSS

High			Low		
response #	frequency	%	response #	frequency	%
4	115	26.0	4	148	36.5
11	56	12.6	10	70	17.2
10	54	12.2	11	62	15.3

Responses

- #4 I take some definite action on the basis of present understanding.
  - #5 I become angry and strike out verbally at the problem.
  - #9 I get prepared to meet the worst.
  - #10 I talk it out with others.
  - #11 I draw upon my past experiences in similar situations.
-

The difference in the type of coping response based on the level of reported stress was not found. It could be that the subject recognized the stress so began focusing on taking care of self and realized that some strategies were not working so continued to use a variety of coping behaviors.

#### ASSUMPTIONS

The assumptions related to the uniqueness of working at the burn unit were that the temperature of the ward makes work more difficult, that there are more disfigured patients than at Brooke Army Medical Center, and that death occurs more frequently on the burn unit. The assumptions related to the increased temperature and disfigured patients were confirmed by the nurses working on the burn unit. The assumption of more frequent death on the burn unit was not upheld. That assumption was endorsed by only the ICU nurses at both the burn unit and Brooke Army Medical Center.

It is interesting to note that while the burn nurses endorsed that most of the patients that they care for are disfigured, they reported that the disfigurement did not affect them. This is contrary to what one would expect. Disfigurement may be seen as deviance and thus arouse upsetting feelings in the person looking at the deviance (Bernstein, 1976).

It could be that the socialization into the profession of nursing does not allow the nurse to recognize

or to admit that the physical characteristic of a disease or injury could affect the nurse's reaction to that patient. Larson (1987) studied 495 nurses to ask them if they have any distressing thoughts about the way they deal with work situations. Twenty-two percent of the subjects described the use of physical or emotional distancing as a coping mechanism. Distancing was the most frequently cited method in the self-report study (Larson, 1987). Distancing is achieved by focusing more on policies, rituals, or routines than on the person who is the patient. Could it be that emotional distancing allows the nurses not to be affected by the patient's injuries?

Part of the education of a nurse includes how to interact with patients in a professional manner. Terms such as "detached concern" and "empathy" are used to describe the quality of a professionals interaction. The nurse is to use empathy rather than sympathy and to make objective decisions regarding the treatment of patients. The nurse is to be close enough to the patients to understand their feelings yet not close enough to be overwhelmed by the feelings that accompany the illness. Such a balance is difficult to maintain.

The nurse may become too removed from seeing the patient as a person and treat him as an object rather than as a patient; thus the nurse disengages from the patient. Disengagement is a "state that exists when persons, groups, nations, or machine parts are not connected to one another

for the purpose of dynamic interaction. Among people this is accompanied by apathy or lack of emotion and delayed or absent response to persons around them" (Lee, 1982, p. 139). Disengagement prevents the nurse from being aware of and responding to the patient. Disengagement is negative or pathological because it leads to inadequate communication and to blighted patterns of primary socialization. The burn unit nurses may cope through the mechanism of denial. Since only self-report measures were used in the study, it is difficult to address the issue of denial. If physiologic measures such as catecholamine and cortisol levels and behavioral measures had also been used, then it would be possible to evaluate consistency among the three types of measures and better address the issue of denial.

#### NONWORK STRESS

The influence of nonwork stress measured by the Perceived Stress Scale and the Recent Life Changes Questionnaire need to be presented. The ANOVA of PSS by assignment and category of nursing care was not significant. The correlation of NSS with PSS was  $.71$   $p \leq .001$ . The NonBurn subjects reported more events happening to them on the Recent Life Changes Questionnaire than did the Burn subjects.

The correlations with NSS and each of the four time periods reported on the Recent Life Changes Questionnaire were in the expected direction, that is, the higher the

score on the NSS the higher the score on the Recent Life Changes Questionnaire. The correlation was significant at a  $p < .01$  for event 2, 3, and 4. The correlation was not significant for event1. The correlations are as follows:  
Event1 .11, Event2 .26, Event3 .25, and Event4 .24.



## Discussion

The study investigated the presence of symptoms related to chronic stress and post-traumatic stress in the ANC officers and civilian registered nurses assigned to the U.S. Army Institute of Surgical Research (burn unit), Ft. Sam Houston, Texas. Comparison groups were composed of ANC officers and civilian registered nurses assigned to selected intensive care (ICU) and nonintensive care (NonICU) wards of Brooke Army Medical Center. The subjects were divided into four groups: Burn ICU, Burn NonICU, NonBurn ICU, and NonBurn NonICU. The groups were comparable on relevant demographic and professional characteristics. The wards used for the comparison groups were surgical, medical, and pediatric ICU and NonICU wards since burn nursing requires expertise in many nursing specialties. Pediatric nurses were included in the comparison groups because approximately one third of the patient population of ISR are pediatric patients.

The study consisted of self-report questionnaires that subjects completed away from the worksite. Variables studied were job stress, job satisfaction, non-work events that may contribute to stress, emotional support, coping style, symptoms associated with chronic stress (anxiety, depression, alienation, and somatic complaints), behaviors associated with post-traumatic stress (intrusion and avoidance), and demographic data (age, sex, years of nursing experience, and marital status).

NURSING STRESS SCALE

A significant difference was found on the total score of the Nursing Stress Scale which measures reported job-related stress. Both Brooke Army Medical Center groups (ICU and NonICU) reported higher levels of job stress on the Nursing Stress Scale than did both of the burn groups (ICU and NonICU). This finding was opposite of what had been hypothesized. There are several possible explanations for this finding.

#### MEDIATING FACTORS

One explanation relates to the possible appraisal that a stressor may evoke. An appraisal may be harm/loss, threat, or challenge (Lazarus & Folkman, 1984). Challenge is associated with a potential for growth and positive emotions such as eagerness and excitement. Harm/loss is associated with a loss that has already happened while threat is associated with potential harm. An appraisal of harm/loss or threat is accompanied by negative emotions such as fear and anxiety. A situation may hold elements of both a threat and a challenge and thus evoke both positive and negative emotions. This study was conducted under the assumption that appraisal of job stressors would be seen as harm/loss and threat rather than as a challenge. A burn injury is catastrophic in magnitude for both the victim and his or her loved ones. Disfigurement caused by the burn injury carries a lifelong stigma. Severe pain is inflicted in the healing and rehabilitation of the burn victim

(Andreasen & Norris, 1977; Bernstein, 1976; Brodland & Andreasen, 1979). One would think that dealing with such a patient would be a stressor for the nurse and could even suspect that the specialty of burn nursing would be more stressful than other nursing specialties.

A survey of ANC officers that had been assigned to the burn unit and are still on active duty was done (Rikli, 1987). One question on the survey was "Compared to other military nursing assignments, was your assignment at the burn unit more stressful, less stressful, or the same amount of stress as your other nursing assignments?" The nurses were asked to describe the reasons for their response. Of the 42 nurses surveyed, 25 returned completed questionnaires. Nineteen out of 25 former burn nurses rated the assignment at the burn unit as more stressful and frequently cited reasons were the temperature of the ward, the disfigurement of the patients, and participating in painful procedures. Yet, the data from the nurses while working at the burn unit do not support the notion that the burn nurses report more stress than the nonburn nurses. In addition, the nurses while working at the burn unit, do not identify disfigurement of the patients as a factor. What could explain these counter-intuitive findings?

Can one find other examples that a group that would expect to be stressed does not seem to be effected? One such case can be found in the combat unit known as "Merrill's Marauders" in the India and Burma theater during

the Second World War. "Merrill's Marauders" marched and fought in the heat, jungles, and mountains longer than any of the military planners thought would be possible (Hopkins, Sterling, & Voorhes, 1969). It was even an accomplishment more grand than imagined because the soldiers were ill with malaria, dysentery, and typhus. The careful account of their medical condition was recorded by the physicians assigned to each of the three battalions. One would expect that men in such a compromised health status could not be successful in achieving the combat mission, yet their record as a fighting unit was excellent.

Another explanation is suggested by the results for the subscales of the NSS. The ANOVA revealed significant differences on the subscale that reflected conflict among nurses. The scores indicated that there was more conflict in the NonBurn groups than in the Burn group. Another measure that related to interpersonal relationships was that of Perception to Access to Emotional Support. The ICU nurses reported having more access to emotional support than did the NonICU nurses. The lack of conflict in relationships among the Burn nurses may provide support for the Burn nurse. The greater perception of access to emotional support enjoyed by the ICU nurses may protect them from some of the negative effects of stressors. The BurnICU nurses have the benefit of both lack of conflict among nurses and a sense of access to emotional support.

The Institute of Surgical Research enjoys worldwide

recognition as an excellent center for burn care, education for health care professionals, and research. The Institute of Surgical Research has been credited with valuable contributions to the reduction of mortality in burn victims through the research and development of an antimicrobial agent which has reduced infection rates, prevention of the common gastric complications seen in burn victims, and a formula for fluid replacement which is important in proper hemodynamic functioning. The burn unit is an elite organization in that it is recognized worldwide as a leader in research and the treatment of burns. The burn unit is also an important educational site and trains physicians from around the world as well as U.S. military physicians, physical therapists, occupational therapists, dietitians, and nurses in the specialization of burn treatment. The status gained from being part of an elite organization could contribute to a more positive outlook of the situation one encounters in the setting. The secondary appraisal of being able to cope with stressors could be enhanced by feeling one is elite.

Another possible factor contributing to the lower report of stress by the Burn nurses could be the difference in the physical plants of the two settings. While the burn unit is housed in Brooke Army Medical Center, the burn unit has recently been remodeled and appears to be designed in a way that makes it easier for the nurses to give care. For example, lighting, access to electrical outlets, and



adequate room for equipment in patient care areas are improvements enjoyed by the burn unit but not by Brooke Army Medical Center. The structural layout and state of physical repair of Brooke Army Medical Center appears to be inferior to that of the burn unit. Physical environment has been identified as a stressor in research of stress in nursing (Kelly & Cross, 1985).

Additionally, the daily involvement of the psychiatric clinical nurse specialist was mentioned by several of the burn unit nurses as being an asset in helping the nurses to deal with emotional issues in relating to the patients and families. Brooke Army Medical Center also has a psychiatric clinical nurse specialist, but the size of Brooke Army Medical Center makes it impossible for one psychiatric clinical nurse specialist to be an integral part of each ward as at the Institute of Surgical Research.

#### IMPACT OF EVENT SCALE

The results on the Horowitz Impact of Event Scale was in the opposite direction of what was expected. It was thought that the nurses at the burn unit would score higher than the nurses at Brooke Army Medical Center due to the daily contact with the victims of trauma and suffering of patients. One would expect that nurses would be affected by being around patients who were suffering. Davitz and Davitz (1975) conducted interviews with more than 200 female nurses to collect data on how nurses feel when patients

suffer. The findings were that nurses have more difficulty responding to emotional pain of patients than to the physical pain experienced by patients. Nurses reported that they deal with patients which they feel they can not help by distancing themselves from the patients. Nurses reported that they are most likely to distance themselves from patients that are likely to die or be severely disabled.

The emotional distancing is associated with burnout. It could be that burnout is an early manifestation of delayed post-traumatic stress reaction. Longitudinal studies of nurses on the cumulative effects of dealing repeatedly with suffering and death of patients have not been done (Davidson & Jackson, 1985). It could be that it is too early to see the symptoms of post-traumatic stress in the burn nurses. They are confronted daily with severe disfigurement and being involved in treatment procedures that are painful for the patients. In order to function in the setting, the burn unit nurses may find it necessary to use distancing more than the Brooke Army Medical Center nurses. The distancing appears to protect the nurse from an environment in which they must function. It could be that after leaving the burn unit, the nurse no longer feels the need for emotional distancing and that may be when the effects of the burn unit assignment become apparent. Because the Brooke Army Medical Center nurses are not constantly confronted by severe suffering and disfigurement, they may not distance themselves as much as the burn nurses

do. The lack of distancing could make the nurse more aware of the patient's suffering and thus the nurse may be more affected by the patient's suffering.

The review of the literature found emotional support to be a mediator in stress. The findings in this study are consistent with that hypotheses in that nurses assigned to high stress group on basis of median split of the NSS reported significantly less emotional support than the nurses assigned to the low stress group. In addition, further analysis revealed that the Burn nurses reported having more emotional support than the NonBurn nurses. Perhaps the emotional support mediated the effects of the stressors encountered in the burn unit.

The multiple regression used in predicting NSS provides evidence that it is not the assignment or the category of nursing care that makes the largest contribution to the NSS, but rather psychosocial characteristics of the nurse. It is not the type of patients that a nurse is working with that determines the level of stress, but it is what the nurse brings into the situation and how administration provides for physical environment of the wards, staffing ratios, and personnel management issues.

There are several limitations of this study. One limitation is the small numbers of nurses drawn from the Burn NonICU. This limitation could not be overcome because of the small number of registered nurses assigned there. In fact, all but one of the nurses assigned there participated

in the study.

Findings of this study may not generalize to other burn units due to the uniqueness of the military setting.

Another limitation is that the study is based on a one time self-report of measures relating to stress. Meaningful interpretation would be enhanced by using repeated measures over time to include before, during, and after tour of duty at the burn unit. The findings would be stronger if physiologic and behavioral measures were used in addition to the self-report measures. If distancing and denial are the coping mechanisms used by a subject, the self-report would give incomplete data.

The finding that the NonBurn group reported more stress in the work setting than did the Burn nurses is counter-intuitive. One might think that since the burn unit is an elite organization, ANC officers with special qualifications are chosen for that assignment. Assignment policies of the Army Nurse Corps Branch indicate that no special selection for the staff of the Burn Unit is made. The demographic data in this study give evidence that the nurses assigned to the burn unit do not differ from the nurses assigned elsewhere. The differences in the nurses may occur as they strongly identify with the burn unit and develop esprit de corps.

The question then is, if the burn nurses are the same as the comparison group nurses, do the burn nurses change during their assignment to the burn unit? This study was

not designed in a way to answer that question. Is it possible for the burn nurse to habituate to the disfigured burn victim and to the nursing care interventions that must be performed?

The findings of this study indicate that caution should be used when one is making a judgment as to the stress inherent in a particular specialty of nursing. The nurse-work environments can not be judged to be stressful based only on the type of patient on the ward. If one has a preconceived notion as to the stress level of a unit, stressful environments may not be recognized and necessary interventions to support the staff may be overlooked.

Additional research could be designed to investigate the impact that the role of a Consultation Liaison Psychiatric Nurse has on patients as well as members of the health care team.

A longitudinal study of nurses involved in trauma nursing could be done to see if initially there is a higher stress level in the nurse and to identify what coping mechanisms enable the nurse to lower stress. Such a study could be done with other nursing specialties as well. A profile based on individual and work setting factors needs to be developed to identify the nurse at risk for coping ineffectively. Such a profile would allow for interventions so that the effects of working in a stressful environment can be decreased. For example, a nurse identified as having little access to social support could be made aware of



opportunities for social support. Both the individual nurse and administration have a responsibility in seeing that an environment exists that contributes to the reduction of the effects of being in a stressful occupation.

## Appendices

## Appendix A

## Volunteer Agreement

I \_\_\_\_\_ have attained my eighteenth (18th) birthday, and otherwise having full capacity to consent, do hereby volunteer to participate in an investigational study entitled Psychosocial Determinants of Stress in Nursing under the direction of Maj(P) Patricia A. Rikli, doctoral student in Department of Medical Psychology at the Uniformed Services University of the Health Sciences at Bethesda, Maryland.

The implications of my voluntary participation, the nature, duration and purpose of the study and the methods by which the study is to be conducted have been presented by the principle investigator. Inconvenience and hazards are set forth in detail on the attached page of this agreement, along with my initials or signature. I have been told how to contact the principle investigator should I have questions regarding the study.

I am aware that the information gained may be published in psychology and nursing literature and that my responses are confidential.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Printed name)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Permanent address)

I would like to have a summary of the results. no\_\_\_\_  
yes\_\_\_\_

Address to be used in sending summary if summary is desired

\_\_\_\_\_  
\_\_\_\_\_

## Appendix B

## Description of Subjects by Group

Factor	Burn ICU	Burn NonICU	NonBurn ICU	NonBurn NonICU	Total
SEX					
male	6	3	5	9	23
female	9	4	36	28	77
ONLY ADULT IN HOUSEHOLD					
yes	4	5	13	15	37
no	11	2	28	22	63
MARITAL STATUS					
married	9	2	22	17	50
single	6	5	19	20	50
NUMBER OF CHILDREN LIVING WITH YOU					
0	8	5	20	21	54
1	1	0	9	2	12
2	1	1	7	8	17
3	3	0	3	2	8
4	0	0	0	2	2
missing data					7
STATUS					
military	9	4	24	20	57
civilian	6	3	17	17	43
MEAN AGE	38.7	38.1	35.6	36.2	
MEAN YEARS NSG EXP	10.6	12.1	10.4	9.6	

## Appendix C

## Background Information

Please provide the following information:

SEX M\_\_\_\_F\_\_\_\_ WARD\_\_\_\_\_ Year of Birth\_\_\_\_\_

Are you the only adult in your household? Yes\_\_\_\_  
No\_\_\_\_\_

Marital status: Married\_\_\_\_ Single (divorced, separated,  
widowed)\_\_\_\_\_

List ages of children \_\_\_\_\_ Living with you?  
Yes \_\_\_\_\_ No \_\_\_\_\_

Years experience as R.N.\_\_\_\_ Have you had ICU course?  
yes\_\_\_\_ no\_\_\_\_

(for ANC) primary SSI\_\_\_\_ secondary SSI\_\_\_\_

Do you have any additional duties? (for example, inservice  
coordinator, time schedule, flight team).

Do you have another job in addition to BAMC or ISR?  
Yes\_\_\_\_ No\_\_\_\_

List all previous nursing assignments. If you have had more  
than one position at any given location, list each position  
and give dates.

Place/Date of Assignments	Type of Ward	Duty Position
from to	(e.g. pediatric, ortho, ICU)	(e.g. staff or head nurse)



# Appendix D Manipulation Check Questionnaire

Please read each statement and circle the number which most closely corresponds to your level of agreement.

- 1 means you strongly disagree
- 2 means you disagree
- 3 means you mildly disagree
- 4 no opinion
- 5 means you mildly agree
- 6 means you agree
- 7 means you strongly agree

- |   |               |
|---|---------------|
| 1. I feel a loss when a patient dies.                             | 1 2 3 4 5 6 7 |
| 2. The temperature of this unit is uncomfortable.                 | 1 2 3 4 5 6 7 |
| 3. The temperature of this unit makes working more of an effort.  | 1 2 3 4 5 6 7 |
| 4. Friends have told me that I am drinking too much.              | 1 2 3 4 5 6 7 |
| 5. Death occurs frequently on our unit.                           | 1 2 3 4 5 6 7 |
| 6. Sometimes it is hard for me to look at the patients' injuries. | 1 2 3 4 5 6 7 |
| 7. Most of the patients I care for are permanently disfigured.    | 1 2 3 4 5 6 7 |
| 8. I am a competent nurse.  | 1 2 3 4 5 6 7 |
| 9. I can handle any nursing emergency a patient may have.         | 1 2 3 4 5 6 7 |
| 10. The appearance of the patients' injuries does not affect me.  | 1 2 3 4 5 6 7 |
| 11. Since working here, I am drinking more.                       | 1 2 3 4 5 6 7 |
| 12. Since working here, I have more energy than I used to.        | 1 2 3 4 5 6 7 |

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